ROBINSON HELICOPTER COMPANY

R66 MAINTENANCE MANUAL
AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS
RTR 660 VOLUME I

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1-80 Assembly Instructions for R66 Helicopter Crated for Export (continued)

10. For air-conditioned ships:

    a. Refer to Figure 1-1. Remove shipping supports (ty-raps, foam, tape, etc.) from G777-1 compressor assembly. Install hardware securing G782-1 mount weldment to main rotor gearbox. Standard torque hardware per § 20-32 and torque stripe per Figure 5-1. Hook B774-3 spring in drilled hole of NAS1352-4H14 screw. Verify security.

    b. Refer to Figures 1-1 and 1-2. Verify B173-5 V-belt is in good condition. Fit belt around G779-1 pulley and compressor pulley, and install hardware securing compressor to G782-1 mount weldment. Standard torque bolts per § 20-32.

    c. Refer to Figure 1-2. Install hardware securing compressor to G781-1 arm weldment. Rotate compressor up and outboard to tension belt, then tighten hardware securing compressor to weldment. Verify belt is properly aligned on both pulleys. Adjust belt tension until 4.5-5.5 lb of force applied mid-span deflects belt 0.16-inch. Standard torque bolts per § 20-32.

    d. Connect compressor assembly wiring to airframe harness at connectors and install ty-raps as required. Cinch ty-raps until snug without over-tightening, and trim tips flush with heads.

11. Refer to IPC Figure 79-1. Remove F237-1 tailcone frame weldment and F305-5 (aft) inlet. Install tail rotor drive fan shaft (fanwheel installed) through scroll assembly. Install hardware securing aft inlet to scroll assembly. Verify security.

12. Refer to IPC Figure 65-1. Install hardware securing C947-3 plate assembly to F908-1 yoke and tail rotor drive fan shaft. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.

13. Remove shipping supports (ty-raps, foam, tape, etc.) from tailcone assembly, and install tailcone per § 53-40 steps 1 thru 7. Install strobe light. Install communication and GPS antennas (if equipped).

14. Install empennage assembly per § 53-70. Install horizontal stabilizer assemblies per §§ 53-60 & 53-80.

15. Service tail rotor gearbox per § 12-21. Service main rotor gearbox per § 12-11.

16. Remove hydraulic reservoir shipping plug. Install D487-3 vent assembly, special torque vent to 100 in.-lb, and torque stripe per § Figure 5-1 (do not safety wire).

17. Install tail rotor assembly per § 64-10. Match color-coded markings on blades with pitch links.

18. Install main rotor blades per § 62-10. Match color-coded markings on blades with markings on hub and pitch links.

19. Inside engine compartment, remove anti-ice valve cap, starter-generator cap, inducer bleed hose cover, exhaust pipe cover and desiccant, and combustion case drain valve cap. Connect inducer bleed hose to box assembly and tighten clamp. Verify security.

1-80 Assembly Instructions for R66 Helicopter Crated for Export (continued)

20. If ship is equipped with attitude horizon, directional gyro, turn coordinator, and/or vertical card magnetic compass:

A. Attitude Horizon, Directional Gyro, and Turn Coordinator Installation

> **CAUTION**
>
> Directional gyro mount screws must not exceed 1-inch in length.

1. Place a piece of foam under instrument face. Remove (6) screws securing face to console and gently pull face forward. Remove hardware securing instrument hole covers to face and remove covers. Install instruments and secure to face with hardware provided.
2. Connect straight connector(s) to directional gyro and/or turn coordinator. Connect angle connector to attitude horizon, ensuring strain relief points down. Ensure connectors lock. Ty-rap excess wiring. Install screws securing instrument face to console.

B. Vertical Card Magnetic Compass Installation

1. Locate airframe wiring (in windshield center bow), install 2-inch length of B158-3 heat shrink over wiring, and connect compass pins to airframe sockets (polarity is not critical). Slide heat shrink over connection and apply heat. Install (4) screws securing compass to mount, securing wiring atop compass.

21. Connect battery per § 96-10.

> NOTE
>
> Check battery open circuit voltage and perform boost charging or capacity tests as required per Concorde Battery Instructions for Continued Airworthiness.

22. Perform pitot-static leak check per § 95-10.
23. Install Emergency Locator Transmitter (ELT) per § 25-61, as required. Install tailcone cowling assembly per § 53-23.
24. Install fire extinguisher per § 25-62, as required.
25. Fuel helicopter per § 12-41.
26. Verify all shipping supports (ty-raps, foam, tape etc.) have been removed from helicopter. Refer to § 6-70. Secure access panels and inspection doors.

> NOTE
>
> Flight checks to be performed by a qualified pilot and certificated mechanic.

27. Perform ground check per § 5-41 steps 2 thru 9.

CHAPTER 4

AIRWORTHINESS LIMITATIONS

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4-30 Airworthiness Limitations

The Airworthiness Limitations Section is FAA approved and specifies inspections and other maintenance required under 14 CFR §§ 43.16 and 91.403, unless an alternative program has been FAA approved.

R66 Fatigue Life-Limited Parts

Part Number	Description	Maximum Service Life
C023-21, -24, -34, & -35	Tailcone Assembly, Rev AV & Prior	2000 Hours
C044-1 & -2	Horizontal Stabilizer	2000 Hours
C154-1	Main Rotor Hub	2000 Hours
C158-1	Main Rotor Spindle	2000 Hours
C251-3	Main Rotor Shaft	2000 Hours
C545-1	Gear Set, Tail Gearbox	2000 Hours
C545-2	Pinion, Tail Gearbox	2000 Hours
C647-12	Bearing Set, Swashplate	2000 Hours
D079-1	Tail Rotor Guard	2000 Hours
D196-1	Tail Rotor Drive Shaft	2000 Hours
F016-2	Main Rotor Blade	2000 Hours or 12 years[1]
F020-1	Upper Frame	2000 Hours
F029-1 & -2	Tail Rotor Blade	2000 Hours or 12 years[1]
F143-1	Pinion, Main Gearbox	2000 Hours
F146-1	Pinion, Main Gearbox	2000 Hours
F195-1	Yoke, Tail Rotor Drive Shaft	2000 Hours
F235-13	Strut, Upper Frame	2000 Hours
F252-1	Strut, Upper Frame	2000 Hours
F263-1	Housing, Main Gearbox	2000 Hours
F270-1	Cartridge, Main Gearbox	2000 Hours
G062-2	Tail Rotor Hub	2000 Hours
G201-1	Frame, Servo Support	2000 Hours
G950-2	Stabilizer, Pop-out Floats	2000 Hours
C023-21, -24, -34, & -35	Tailcone Assembly, Rev AW & Subsequent	4000 Hours
F050-2	Horizontal Stabilizer	4000 Hours

[1] Whichever limit occurs first. Calendar time starts on date of original RHC-issued Airworthiness Approval.

Approved By: Maureen Moreland
Digitally signed by Maureen Moreland
Date: 2023.08.16 06:57:44 -07'00'
Date: 16 Aug 2023
For Manager, Federal Aviation Administration
West Certification Branch, AIR-770

FAA Approved: This page constitutes the Airworthiness Limitations Section in its entirety, is considered segregated from the rest of the document, and sets forth the FAA-approved mandatory replacement times for fatigue life-limited parts.

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5-45 100-Hour / Annual Inspection (continued)

TAILCONE (continued)

_____ **Tailcone Exterior:**
Inspect condition. Refer to § 53-41. Inspect tailcone exterior for nicks, scratches, dents, cracks, corrosion, fretting or loose rivets. Verify no obstructions in drain hole at forward edge of each bay (except forward bay).

_____ **F050-2 Horizontal Stabilizer (if installed):**
Inspect condition. Verify no nicks, scratches, dents, cracks, corrosion, fretting, or loose rivets. Verify security.

_____ **Antennas:**
Inspect condition. Verify no cracks where antennas mount to tailcone. Verify security.

_____ **Anti-Collision Light:**
Inspect condition. Verify no cracks where anti-collision light mounts to tailcone. Verify lens cleanliness, clarity, and security. Verify proper operation.

_____ **Tail Rotor Visual Warning Guard:**
Inspect condition. Verify no cracks where guard mounts to tailcone. Inspect guard welds for cracks or corrosion. Verify security.

_____ **Wiring:**
Inspect condition. Verify no loose, chafed, or broken wires or terminals. Verify neatness, proper routing and installation, and security.

_____ **Fasteners & Torque Stripes:**
Inspect condition. Verify proper installation and security of fasteners. Renew deteriorated torque stripes per Figure 5-1.

_____ **Close & Secure:**
Verify foreign objects are removed. Verify equipment security. Verify cleanliness of interior and of inspection plugs. Install plugs removed in preceding steps. Verify security.

5-45 100-Hour / Annual Inspection (continued)

TAIL ROTOR & TAIL ROTOR GEARBOX

NOTE
Verify proper hardware installation securing plastic inspection cover. Longer screws could contact aft flex coupling and yoke.

_____ **Plastic Inspection Cover:**
Clean cover and inspect condition. Replace as required.

_____ **C947-3 (Tail Rotor Drive) Plate Assembly, Aft:**
Refer to Figure 5-4A. Inspect condition. Verify no distortion, nicks, scratches, cracks, corrosion, and fretting. If fretting is detected, contact RHC Technical Support. Verify bonded washers are installed on both sides of each flex plate ear. Verify proper installation, security, and operating clearance.

_____ **Tail Rotor Gearbox Input Yoke:**
Inspect condition. Verify no cracks, corrosion, or fretting. Inspect weld for cracks or corrosion. Verify proper installation, security, and operating clearance.

_____ **Tail Rotor Gearbox:**
Inspect condition. Verify gearbox-to-tailcone mounting security. Verify no leakage at input or output seals, chip detector, vent plug-filler assembly, or sight gage. With ship on level ground, verify correct oil level and oil cleanliness through sight gage and adjust or flush as required. Inspect Telatemp per § 5-35. Inspect output shaft for nicks, scratches, dents, cracks, or corrosion. Verify proper installation of safety wire (if installed).

_____ **Empennage:**
Inspect condition. Verify no nicks, scratches, dents, cracks, corrosion, fretting, or loose rivets on skins or near attachment points. Check tail rotor skid for evidence of tail rotor or tail rotor skid strike. Refer to § 5-61 for tail rotor skid strike inspection criteria. Verify no obstructions in lower vertical stabilizer and skid drain holes. Verify proper installation and security.

_____ **Aft Navigation Light:**
Inspect condition. Verify no cracks where aft navigation light mounts to empennage. Verify lens cleanliness, clarity, and security. Verify proper operation.

5-60 Special Maintenance and Instructions

WARNING

Do not install or return to service any part removed from a damaged aircraft unless the part can be verified as undamaged. Return suspect parts to RHC, with details of damage history, for airworthiness evaluation.

5-61 Tail Skid Strike

A. If evidence of scuffing is found on the tail skid, inspect the rotorcraft as follows:

1. Visually inspect tail rotor blades for evidence of solid object or ground contact. If tail rotor damage is found, inspect tail rotor for strike per § 5-62. _____
2. Visually inspect vertical stabilizer for evidence of buckling, cracks, or loose rivets at tail skid and at lower vertical stabilizer-to-horizontal stabilizer attach points. _____
3. Visually inspect tail rotor guard for bending or cracking at attach mounts. _____
4. Visually inspect the empennage assembly-to-tailcone attach points for evidence of buckling, loose rivets, or cracking. _____
5. Visually inspect tailcone for damage and tailcone-to-upper steel tube structure attach points for buckling and loose attach bolts. _____

B. For tail skid bending or breakage, or buckling of lower vertical stabilizer, perform the following inspections in addition to those listed in Step A.

1. Perform tail rotor drive shaft runout per § 65-21. _____
2. Remove tailcone assembly per § 53-40. Visually inspect (8) tailcone mounting holes [(4) tailcone & (4) upper frame] and verify no elongation of holes (0.454-inch diameter maximum). _____
3. Remove empennage assembly per § 53-70. Remove tail rotor gearbox per § 65-40. _____
4. Perform § 5-75 Inspection After Stabilizer Damage. _____
5. Visually inspect mount assembly or horizontal stabilizer (as applicable) attach points and verify no elongated holes (0.386-inch diameter maximum), loose rivets, or buckling. _____
6. Remove lower vertical stabilizer per § 53-72. Visually inspect attach points on vertical stabilizer and mount assembly or horizontal stabilizer (as applicable). Verify no elongated holes (0.266-inch diameter maximum), buckling, cracks, or loose rivets. _____
7. Remove tail rotor guard per § 53-50. Remove D082-1 mount. Visually inspect guard, mount, & blocks; verify no deformation & no elongation of attach holes. _____

5-62 Tail Rotor Strike

The tail rotor strike inspection is listed in two parts. Part 1 concerns damage received by a tail rotor blade due to contact with a small stone, tall grass, or some small object contacting rotor blade in free air. Part 2 is concerned with sudden stoppage of tail rotor due to ground or solid object contact causing bending or shearing of a tail rotor blade or blades.

1. Inspect tail rotor blades per § 64-30 and perform Part 2, step (a).
2. If one or both tail rotor blades contact ground or a solid object causing bending or shearing of blades a tail rotor sudden stoppage inspection must be performed. Inspect per following procedure:
   a. Perform tail rotor drive shaft runout per § 65-21. If runout exceeds 0.025 inch at any location the shaft must be replaced.
   b. Remove tail rotor assembly per § 64-10 and tail rotor gearbox per § 65-40 and return to RHC.
   c. Visually inspect D224 tail rotor drive shaft for evidence of twisting, nicks, dents or scratches. Nicks and scratches may be polished out to a maximum of 0.003 inch deep. Evidence of twisting or dents is cause for replacement of the drive shaft.
   d. Remove yokes from each end of tail rotor drive shaft. Inspect arms for deformation and holes for any elongation. Strip paint and dye penetrant inspect yokes according to manufacturer's instructions (forward yoke may be magnetic particle inspected).
   e. Remove F196-1 (tail rotor drive) shaft weldment per § 65-10. Strip paint back at least 2 inches from welds at both ends of shaft and dye penetrant or magnetic particle inspect. Verify no cracks.
   f. Replace C947-3 plate assemblies (forward, intermediate, and aft).
   g. Visually inspect F193-2 hanger and F172-3 (bearing) housing for cracks or deformation.
   h. Visually inspect tailcone and empennage for evidence of a tail rotor blade strike.
   i. Visually inspect main rotor system.

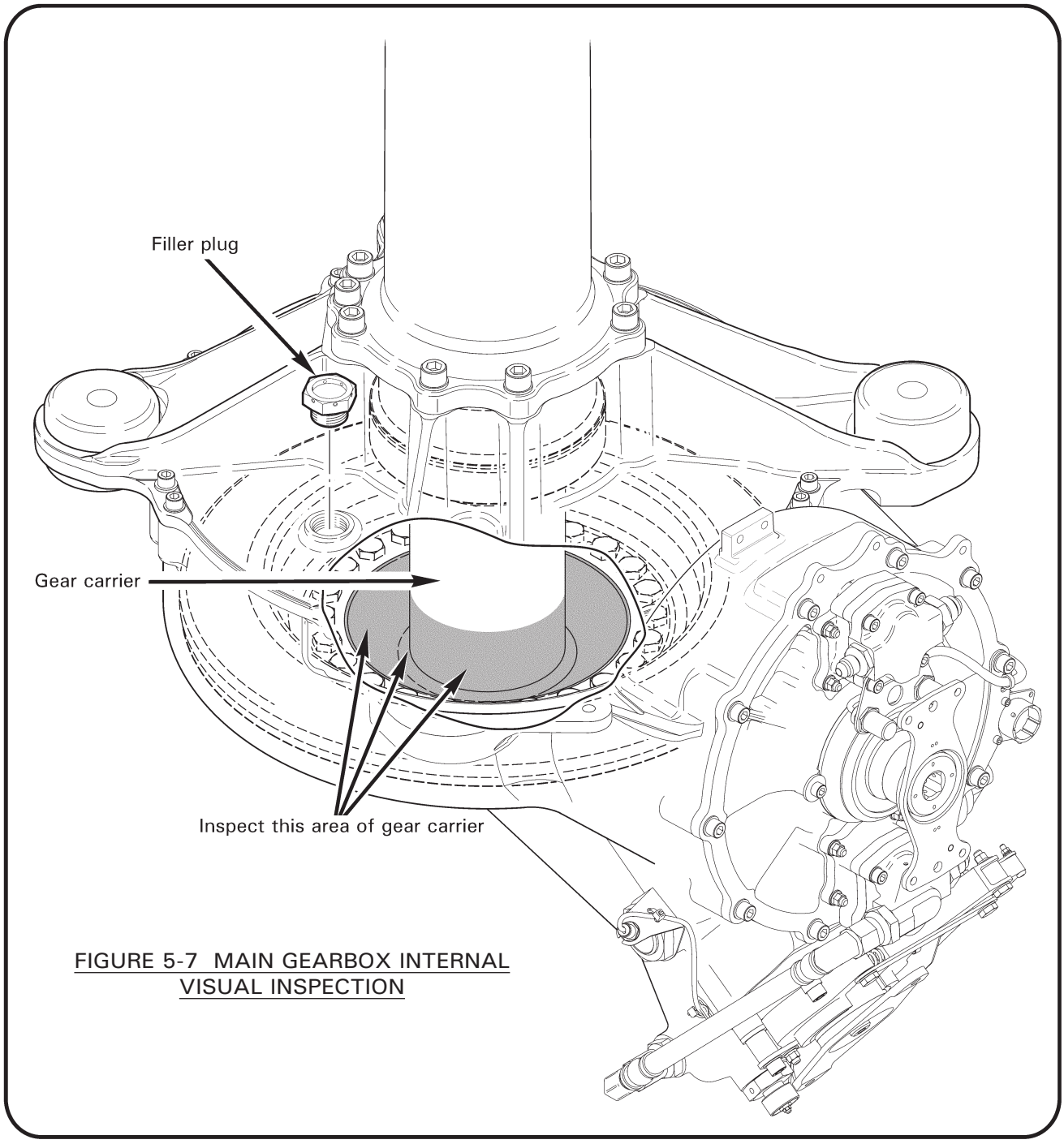


FIGURE 5-7 MAIN GEARBOX INTERNAL VISUAL INSPECTION

5-74 Main Rotor Gearbox Internal Visual Inspection

1. Refer to Figure 5-7. Gain access to and remove main gearbox filler plug.
2. Via filler plug hole and using borescope, miniature camera, or smartphone camera with flash, visually inspect specified area of gear carrier. Rotate gearbox by hand-turning main or tail rotor as required to view entire circumference.
3. If no corrosion or paint bubbling is evident, install filler plug & special torque per § 20-33.
4. If corrosion or paint bubbling is detected, contact RHC Technical Support.

5-75 Inspection After Stabilizer Damage

For damage to an installed C042-1 upper vertical stabilizer, C043-1 lower vertical stabilizer, and/or C044 horizontal stabilizer that results in denting, tearing, or cracking of stabilizer metal, or if a tail skid strike has occurred, perform the following:

1. On associated tailcone's aft C148-5 bulkhead, strip paint from cross-hatched surfaces shown in Figure 5-8 using § 20-71 approved materials.
2. Perform fluorescent penetrant inspection (FPI) per § 20-42 of stripped surfaces. Replace tailcone if crack is indicated.
3. Conversion coat bare aluminum per § 20-51, as required. Epoxy prime (chromated-epoxy primer preferred) & topcoat stripped surfaces per § 20-60.

NOTE

Do not apply primer or topcoat to tail rotor gearbox attachment surfaces.

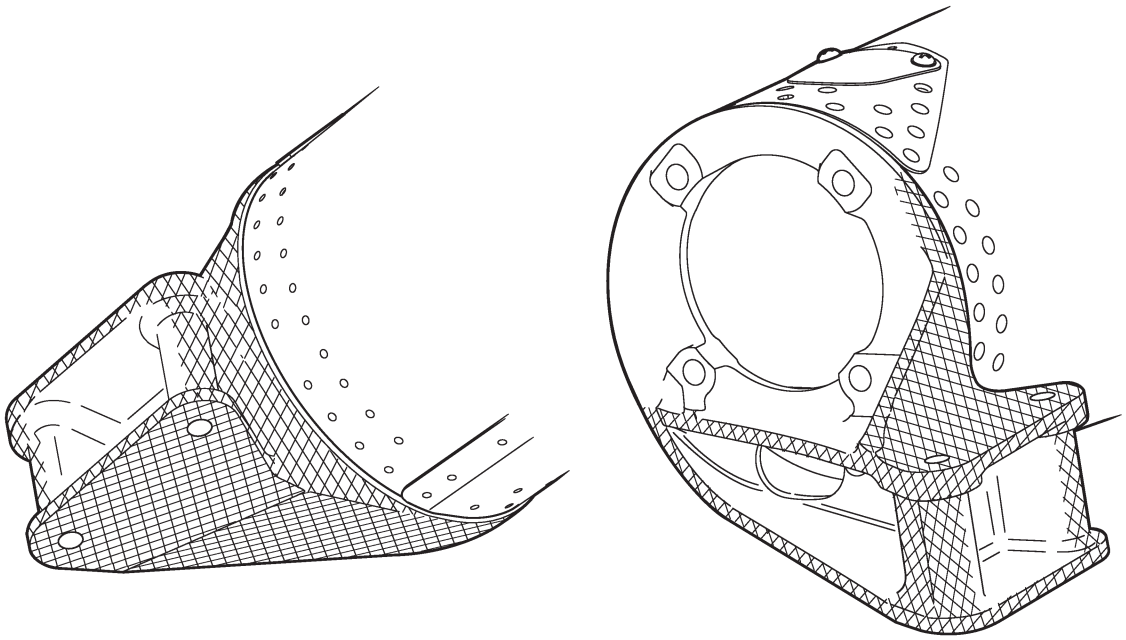


FIGURE 5-8 CROSS-HATCHED SURFACES OF TAILCONE'S AFT CASTING

CHAPTER 6

DIMENSIONS AND DESCRIPTIONS

CHAPTER 6

DIMENSIONS AND DESCRIPTIONS

6-10 Version Description

Type Certificate Data Sheet (TCDS) R00015LA is available at FAA Dynamic Regulatory System website: https://drs.faa.gov.

R66, Turbine: Five place, single-engine, single main rotor, light turbine helicopter. Two-bladed teetering main rotor system with conventional two-bladed tail rotor. Rolls-Royce model 250-C300/A1 turboshaft engine normally rated at 300 shaft horsepower (SHP); 270 SHP 5-minute take-off rating. Maximum gross weight 2700 pounds. Primary fuel is Jet-A (see R66 Pilot's Operating Handbook); 74.6 US gallon fuel tank capacity.

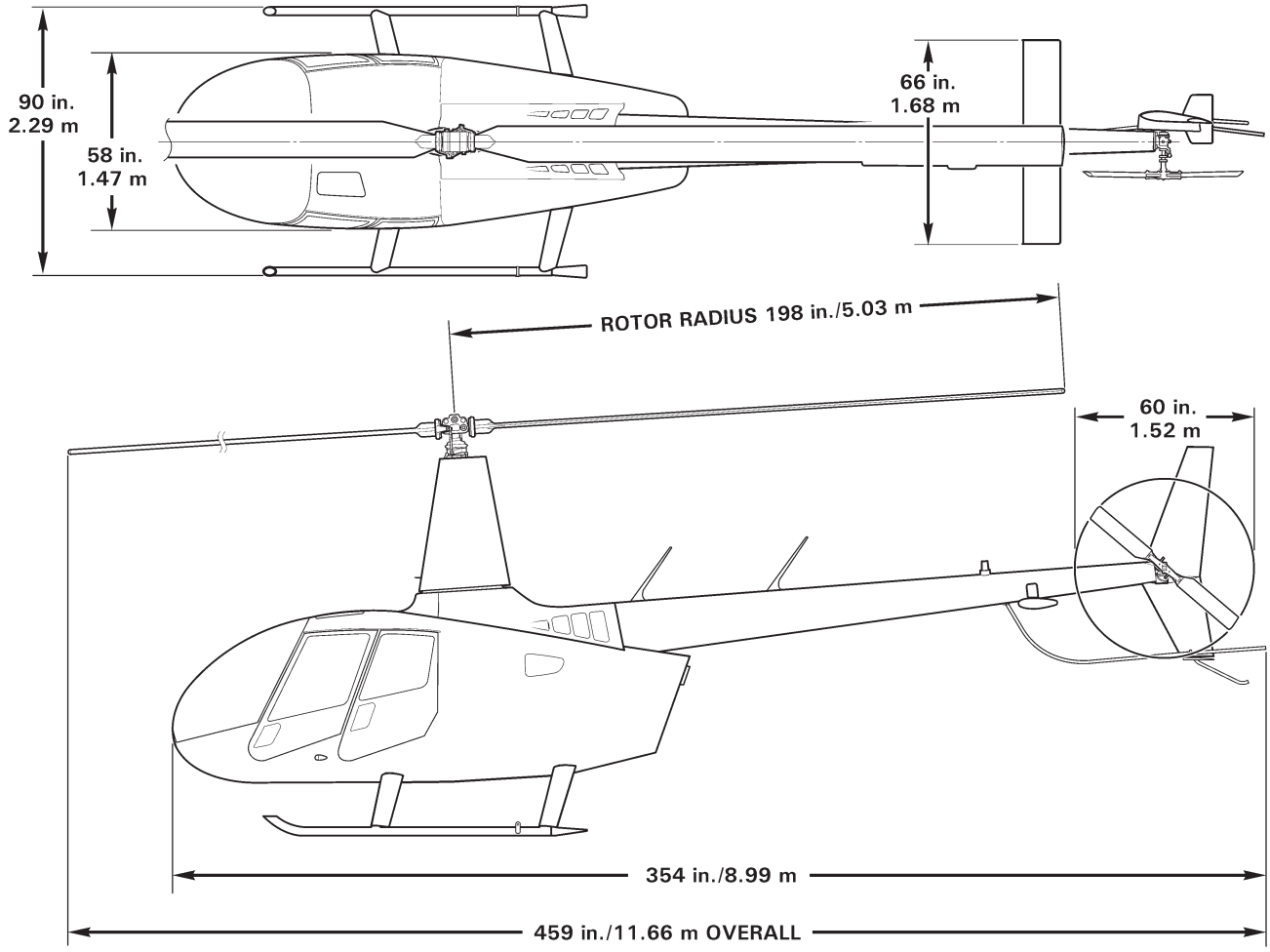
6-20 Datum

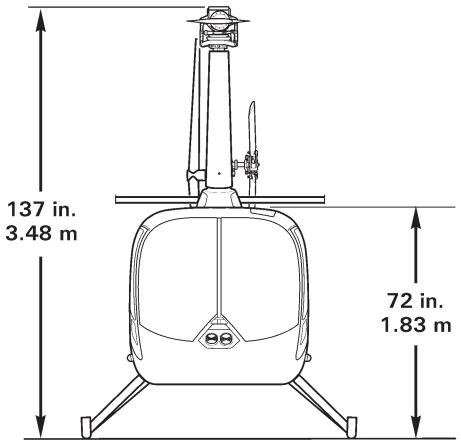
The datum is located 100 inches forward of main rotor centerline.

6-30 Method of Measurement

Fuselage station, tailcone station, water line station, and butt line station values are measured in inches, rounded to the nearest hundredth.

6-40 External Dimensions





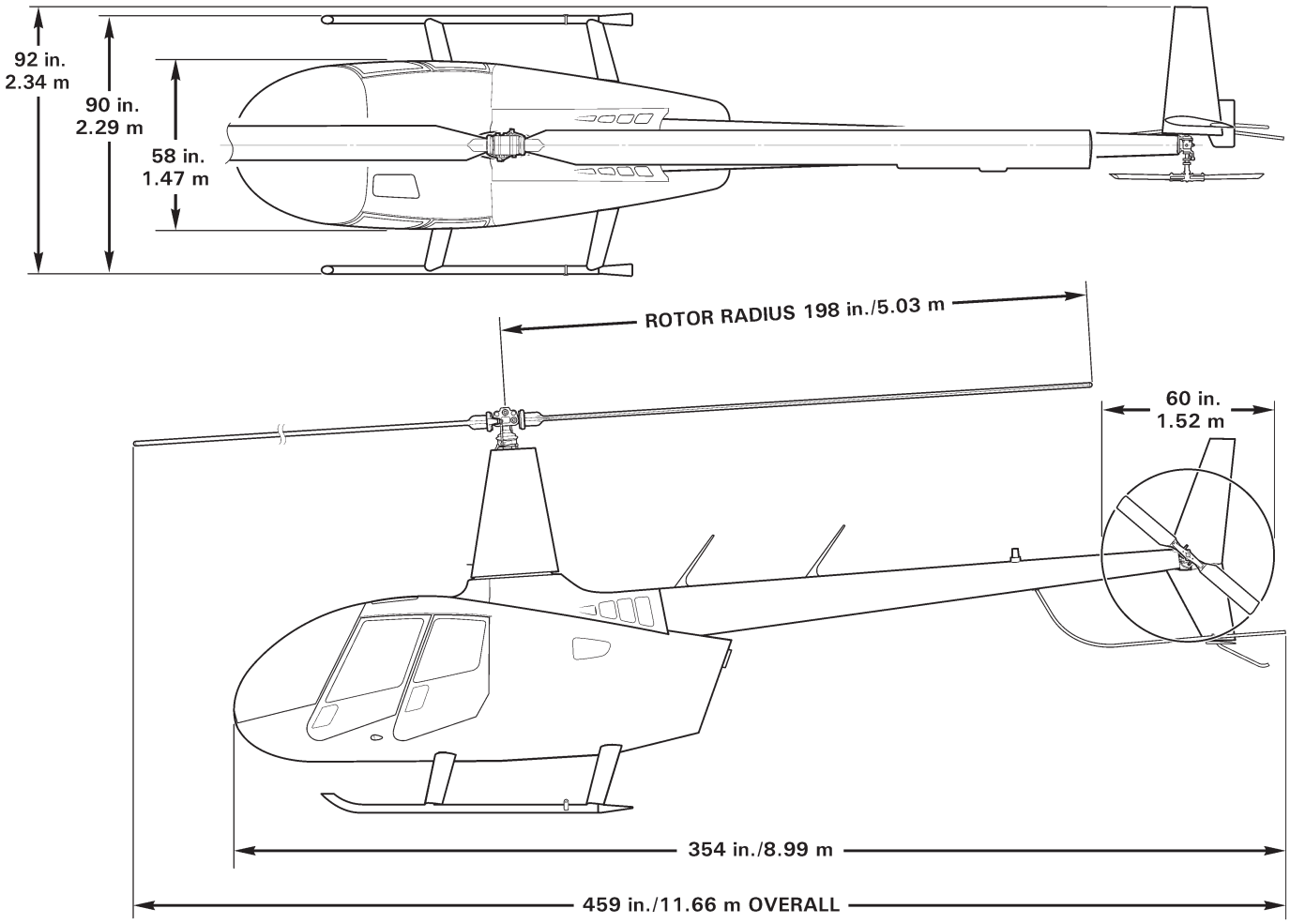
R66

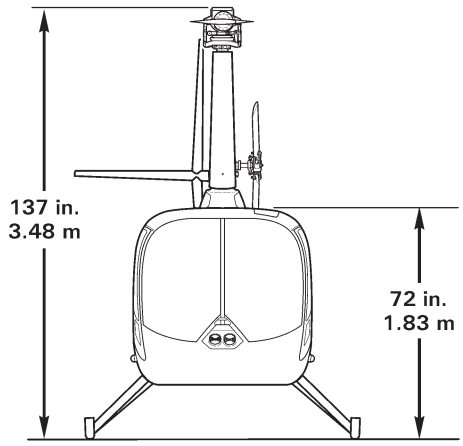
Turbine

EXTERNAL DIMENSIONS

FIGURE 6-1 EXTERNAL DIMENSIONS
(F004-2 empennage installed)

6-40 External Dimensions (continued)





R66

Turbine

EXTERNAL DIMENSIONS

FIGURE 6-1A EXTERNAL DIMENSIONS
(C004-2 empennage installed)

6-50 Baggage Compartment Dimensions

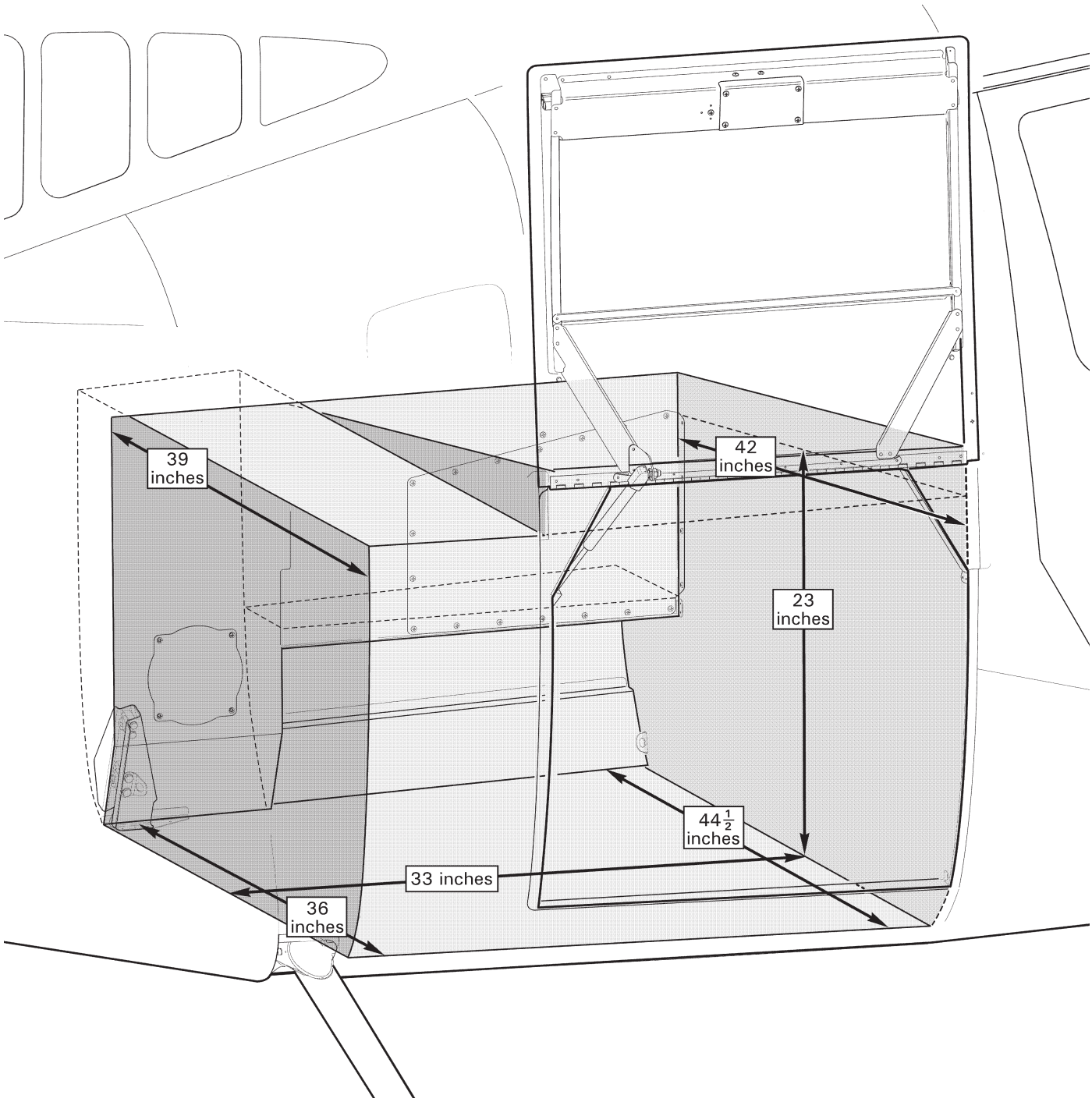


FIGURE 6-2 BAGGAGE COMPARTMENT INTERIOR DIMENSIONS
(Dimensions given are approximate)

6-62 Tailcone Station (TS) Locations

NOTE

Typical angle between tailcone station lines & skin aft edges is 4°30′ from longitudinal centerline. Forward edge of C023-6 skin & aft edge of C023-12 skin are (true) tailcone station lines.

1	Forward Edge C023-6 Skin	TS 0.00
2	Aft Edge C023-6 Skin & Tailcone Centerline Intersection	TS 25.00
3	Aft Edge C023-7 Skin & Tailcone Centerline Intersection	TS 51.00
4	Aft Edge C023-8 Skin & Tailcone Centerline Intersection	TS 74.00
5	Aft Edge C023-9 Skin & Tailcone Centerline Intersection	TS 98.00
6	Aft Edge C023-10 Skin & Tailcone Centerline Intersection	TS 122.00
7	Aft Edge C023-11 Skin & Tailcone Centerline Intersection	TS 146.00
8	Aft Edge C023-12 Skin	TS 177.30
9*	Tail Rotor Gearbox (centerline)	FS 327.00

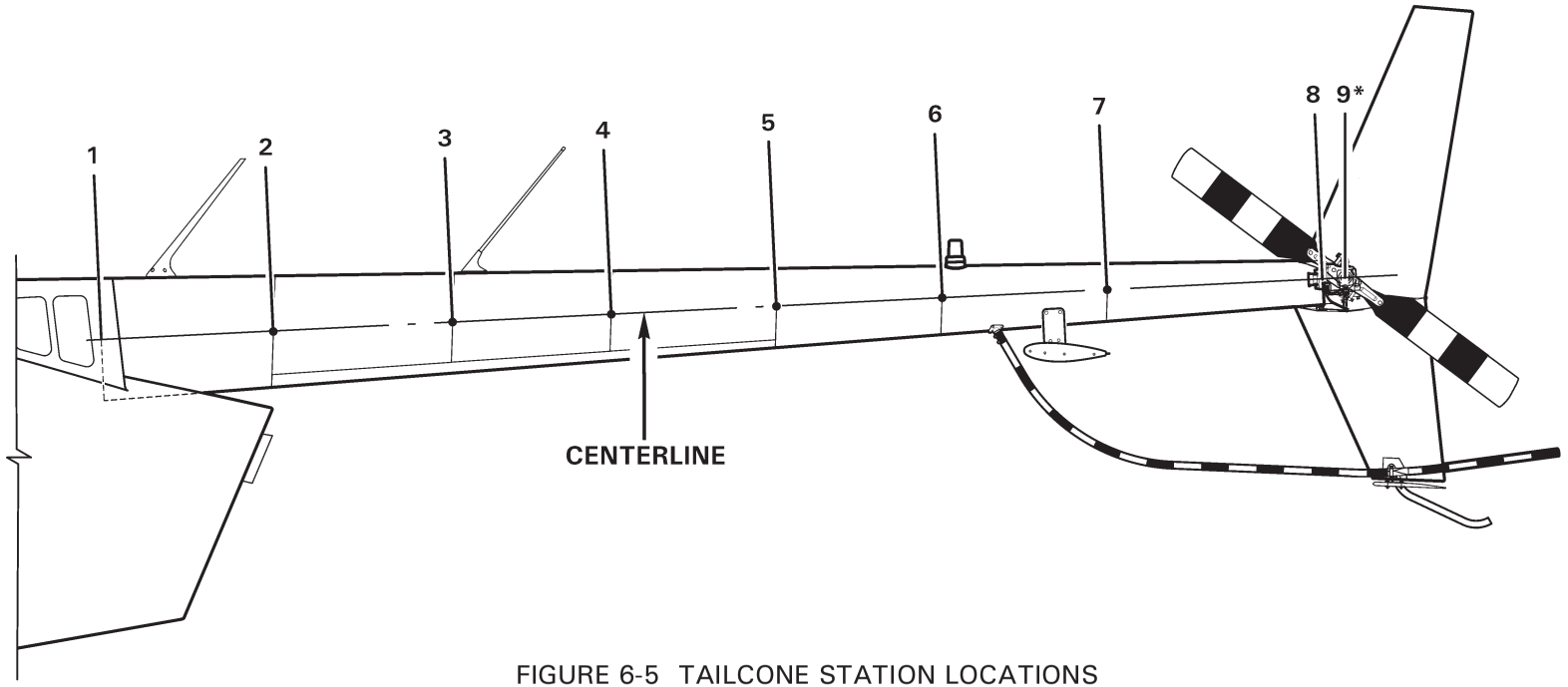


FIGURE 6-5 TAILCONE STATION LOCATIONS

6-63 Water Line (WL) Station Locations

1	Teeter Hinge Bolt (main rotor)	WL 138.00
2	Upper Rib (top)	WL 125.17
3	Middle Rib (top)	WL 104.88
4	Lower Rib (top)	WL 84.59
5*	Tail Rotor Gearbox (centerline)	WL 75.50
6	Main Rotor Gearbox (tail rotor and main rotor drive shaft intersection point)	WL 66.00
7	Baggage Compartment (ceiling, lowest point)	WL 45.60
8	Baggage Compartment (floor)	WL 22.59
9	Belly	WL 20.78
10	Landing Gear	WL 0.79
11	Origin	WL 0.00

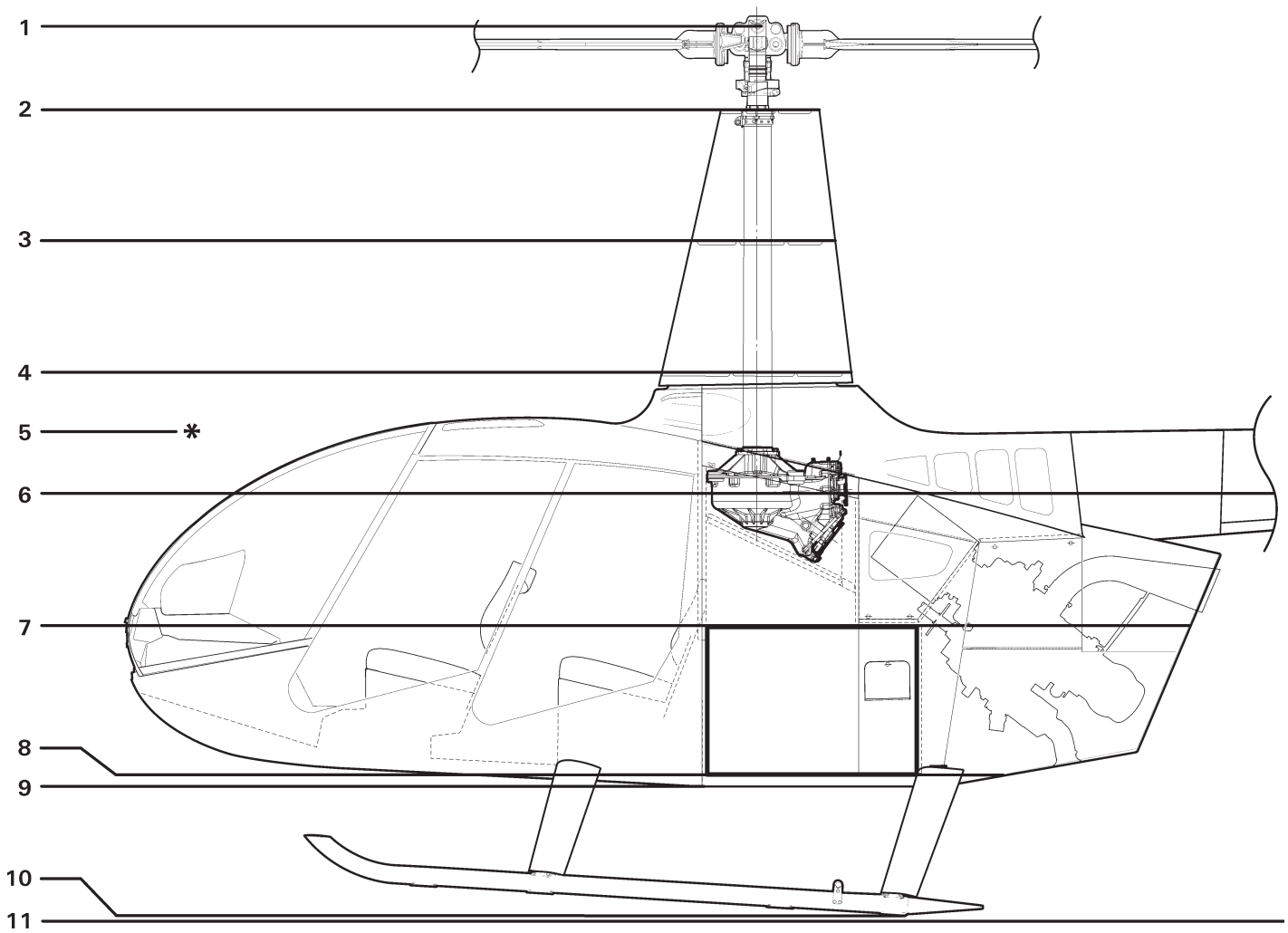
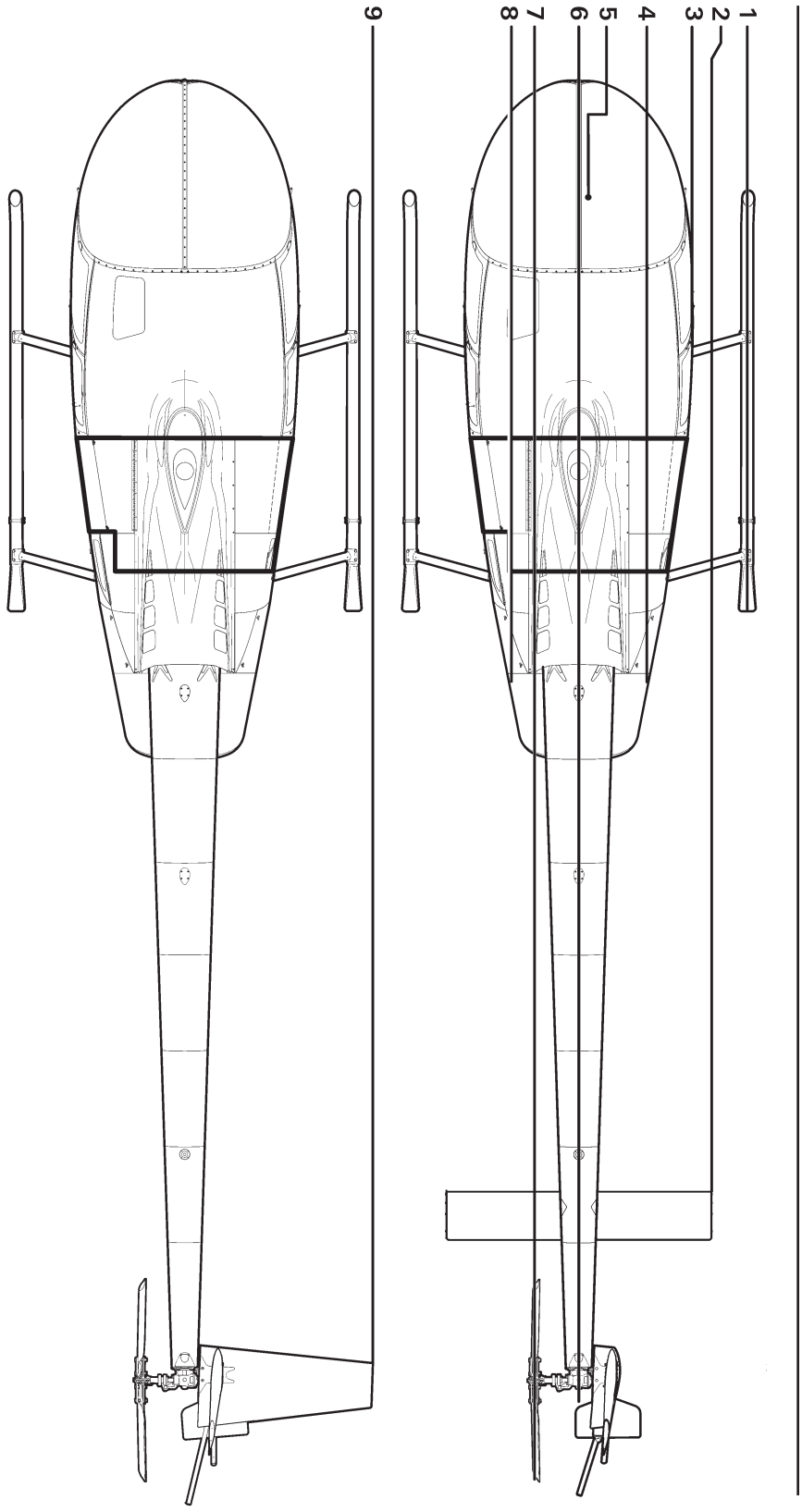


FIGURE 6-6 WATER LINE STATION LOCATIONS

6-64 Butt Line (BL) Station Locations



1	Skid Tube (centerline)	BL 42.00
2	F050-2 Horizontal Stabilizer (outboard point)	BL 33.00
3	Door Post (between forward & aft doors)	BL 28.25
4	Jack Lug/Tab (aft strut assembly)	BL 16.73
5	Ground Handling Ball (jack point)	BL 4.13
6	Origin	BL 0.00
7	Teeter Hinge Bolt (tail rotor)	LBL 11.01
8	Jack Tab (aft strut assembly)	LBL 16.73
9	C044 Horizontal Stabilizer (outboard point)	BL 46.75

FIGURE 6-7 BUTT LINE STATION LOCATIONS

6-70 Access and Inspection Panels

Refer to R66 Illustrated Parts Catalog Chapter 6 for access and inspection panel locations.

6-71 B526 Screws and B527-08 Washers

B526 (TORX Plus®) truss head screws may be used to secure cowlings and access panels. A B527-08 nylon washer may be used under a B526 screw head to further protect thin or painted surfaces.

Following B526 screws are interchangeable with MS27039C080_ screws used to secure cowlings and access panels:

PART:	INTERCHANGEABLE WITH:
MS27039C0806 screw	B526-6 screw
MS27039C0807 screw	B526-8 screw
MS27039C0808 screw	B526-8 screw

Following B526 screws are interchangeable with AN525-832R_ & AN526C832R_ screws:

PART:	INTERCHANGEABLE WITH:
AN525-832R6 or AN526C832R6 screw	B526-6 screw
AN525-832R7 or AN526C832R7 screw	B526-8 screw
AN525-832R8 or AN526C832R8 screw	B526-8 screw

B526-66 screws (used to secure F952-3 plates to F050-2 stabilizer) are not interchangeable with other screws.

NOTE

B526 screws are compatible with T20 or 20IP drivers.

6-80 Antenna Locations

ITEM	ANTENNA	MHz	PART NO.
1	Glidescope	—	CI 193
2	ADF	—	KA44B
3	Marker Beacon	—	CI 102
4	RH Belly UHF	400-960	CI 285
5	DME	—	CI 105-16, KA60
	Transponder	—	CI 105-16, KA60
	ADS-B	—	CI 105-16, KA60
6	LH/RH Belly (Ref)	—	See items 8 and 9
7	Transponder	—	CI 105-16, KA60
8	RH Belly FM	138-174	CI 292-3, DM C63-3/A
		450-470	CI 177-20
	RH Belly AM/FM	—	CI 222
	RH Belly FM	403-512	CI 273, CI 272-1, CI 271
9	LH Belly FM	138-174	CI 292-3, DM C63-3/A
		450-470	CI 177-20
		220-225	D721-1
	LH Belly FM	403-512	CI 273, CI 272-1, CI 271
	LH Belly COM	118-136	CI 122
10	NAV	108-118 & 329-335	D20543 (VOR & LOCALIZER)
		108-118 & 329-335	D20543 (VOR & LOCALIZER W/DIPLEXER)
11	ELT	—	AV-300
12	Cowling GPS	—	GA 35
	Cowling XM	—	GA 55

ITEM	ANTENNA	MHz	PART NO.
13	Upper Fwd COM	—	CI 121, CI 248-5
	Upper Fwd FM	—	CI 177
	Upper Fwd FM	403-512	CI 273, CI 272-1, CI 271
		800-870	CI 306
	Upper Fwd COM/GPS	—	CI 2580-200
	Upper Fwd GPS	—	GA 35
14	Upper Mid RSM/GPS	—	921-00003-001
	Upper Mid GPS	—	GA 35
15	Upper Aft COM	—	CI 121, CI 248-5
	Upper Aft FM	—	CI 177
	Upper Aft FM	403-512	CI 273, CI 272-1, CI 271
	Upper Aft COM/GPS	—	CI 2580-200
16	Lower Fwd FM	—	CI 177
		800-870	CI 306
	Lower Fwd FM	403-512	CI 273, CI 272-1, CI 271
17	Lower Aft FM	—	CI 177
	Lower Aft VHF	118-136	CI 122
	Lower Aft FM	403-512	CI 273, CI 272-1, CI 271
		800-870	CI 306
18	NAV	108-118 & 329-335	D20543 (VOR & LOCALIZER)
		108-118 & 329-335	D20543 (VOR & LOCALIZER W/DIPLEXER)
19	Cowling GPS*	—	GA 35

*Earlier aircraft.

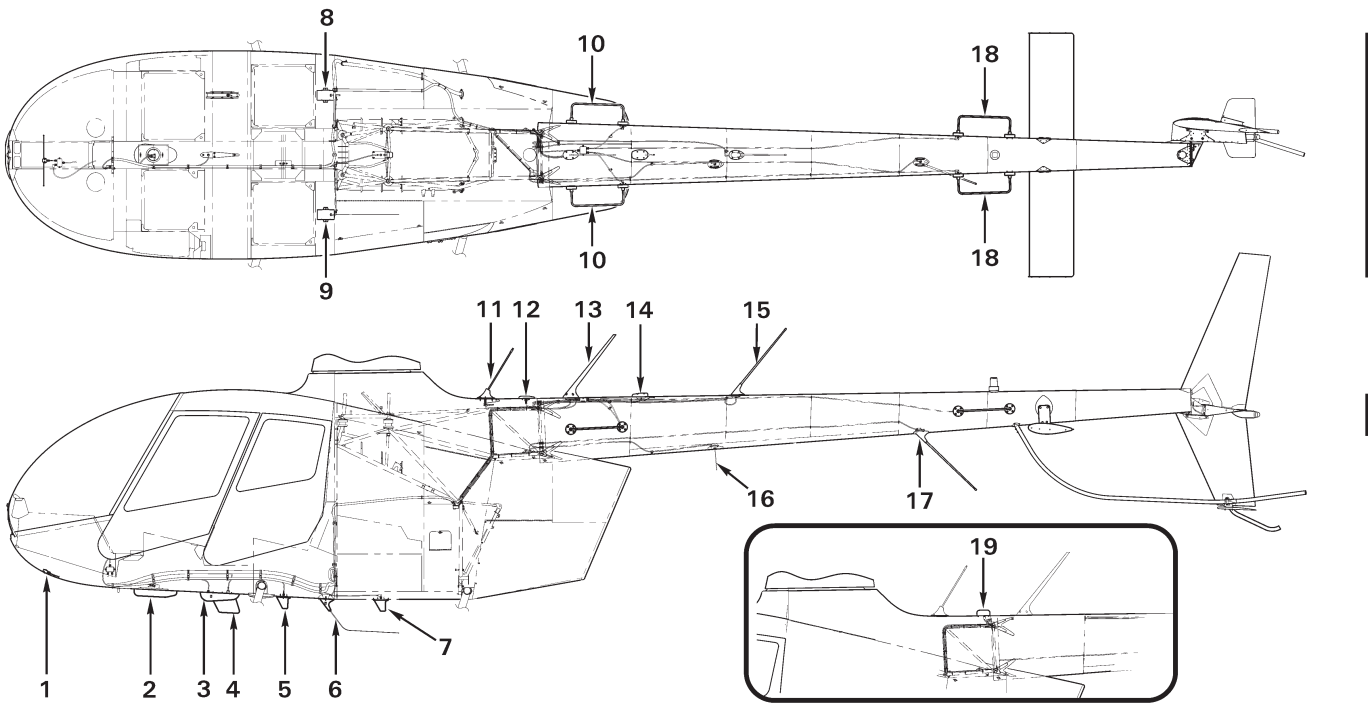


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FIGURE 6-10 ANTENNA LOCATIONS

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CHAPTER 8

WEIGHT AND BALANCE

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8-30 Fixed Ballast

8-31 Nose Ballast

NOTE

Maximum allowable nose ballast is 15.00 lb.

CAUTION

Changing fixed ballast amount affects helicopter empty weight & center of gravity (CG). If helicopter empty weight & CG historical data is suspect, weigh helicopter per § 8-22.

1. Open or remove console assembly per § 95-50.
2. Refer to Figure 8-4. Remove hardware securing A941-5 or -6 ballast plate(s), if installed, to F361-1 panel.
3. Remove or install ballast plates per calculations performed in § 8-22. Select NAS6603 bolt length to meet torque requirements per § 20-30 Part E. Install hardware, standard torque bolts per § 20-32, and torque stripe per Figure 5-1.
4. Install or close console assembly per § 95-50. Verify security.
5. Reweigh and/or calculate basic empty weight and CG per § 8-22.
6. Revise Weight and Balance Record in R66 Pilot's Operating Handbook (POH) Section 6 to reflect ballast removal or installation using the following data:

Item	Weight	Longitudinal Arm	Longitudinal Moment	Lateral Arm	Lateral Moment
Nose ballast	0–15.00 lb	5.15 in.	Variable	0.00 in.	0.00 in.-lb

8-32 Empennage Ballast

NOTE

Approved materials are listed in § 20-70.

CAUTION

Changing fixed ballast amount affects helicopter empty weight & center of gravity (CG). If helicopter empty weight & CG historical data is suspect, weigh helicopter per § 8-22.

A. Removal

CAUTION

Maximum allowable empennage ballast is 9.0 lb (except Police and E.N.G. Versions). One upper and one lower weight are required. Available combinations provide total weight of 3.0, 6.0, & 9.0 lb.

1. Remove D079-1 tail rotor guard per § 53-50.
2. Leaving NAS6606-78 bolts installed in C004-2, C004-3, or F004-2 empennage assembly, remove palnuts, nuts, washers, and lower D301-2, -4, or -8 ballast weight from empennage assembly.
3. Remove one bolt then rotate upper ballast weight to expose empty bolt hole. Install NAS6606-47 bolt and associated hardware in exposed hole, finger tight (install [1] or [2] NAS1149F0663P washers as required under nut to meet torque requirements per § 20-30 Part E).
4. Remove second bolt & upper ballast weight from empennage assembly. Install NAS6606-47 bolt and associated hardware (install [1] or [2] NAS1149F0663P washers as required under nut to meet torque requirements per § 20-30 Part E). Standard torque bolts securing empennage to C148-5 bulkhead per § 20-32. Install palnuts and standard torque per § 20-32, do not torque stripe at this time.
5. As required, solvent-clean upper & lower surfaces of empennage assembly around and between attach bolts. Apply light coat zinc-chromate or epoxy primer to noted surfaces and hardware. Apply topcoat as desired.
6. Apply torque stripe to hardware per Figure 5-1.
7. Install tail rotor guard per § 53-50.
8. As required, weigh helicopter or calculate basic empty weight & CG per § 8-22.
9. Revise Weight and Balance Record in R66 Pilot's Operating Handbook (POH) Section 6 to reflect ballast removal using Table 8-1.

8-32 Empennage Ballast (continued)

B. Installation

CAUTION

Maximum allowable empennage ballast is 9.0 lb (except Police and E.N.G. Versions). One upper and one lower weight are required. Available combinations provide total weight of 3.0, 6.0, & 9.0 lb.

1. Remove C004-2, C004-3, or F004-2 empennage assembly per § 53-70.
2. Solvent-clean around and between 0.375 inch diameter holes on upper & lower surfaces of F044-1 vertical stabilizers mount assembly or C044-1 or -2 horizontal stabilizer, as applicable.
3. Temporarily position correct combination of two D301-2, -4, or -8 weights on mount assembly (or horizontal stabilizer) using two NAS6606-78 bolts & associated hardware, finger tight.
4. Trace outline of weights onto mount assembly (or horizontal stabilizer) upper & lower surfaces using felt-tip marker or tape. Remove weights.
5. Remove paint within traced outlines on mount assembly (or horizontal stabilizer) using approved stripper (ref. § 20-71), or by block sanding (to maintain flatness) using 320-grit or finer aluminum-oxide abrasive sandpaper.
6. Remove tracing tape, if installed. Solvent-clean bare metal on mount assembly (or horizontal stabilizer) & weight clamping surfaces. Conversion coat upper & lower bare metal surfaces of mount assembly (or horizontal stabilizer) per § 20-51.
7. Apply approved chromated-epoxy primer (ref. § 20-77) per § 20-60 to bare metal clamping surfaces of weights and mount assembly (or horizontal stabilizer). While primer is still wet, install empennage assembly per § 53-70.
8. As required, apply primer and topcoat to exposed hardware.
9. As required, apply A257-18 to O-ring and install two AN814-10D plugs on upper weight only (except D301-2 weights). Special torque plugs per § 20-33 and torques stripe per Figure 5-1.
10. Weigh helicopter or calculate basic empty weight and CG per § 8-22.
11. Revise Weight and Balance Record in R66 Pilot's Operating Handbook (POH) Section 6 to reflect ballast installation using Table 8-1.

Item	Weight	Longitudinal Arm	Longitudinal Moment	Lateral Arm	Lateral Moment
Empennage Ballast	3.0 lb	325.4 in.	976.2 in.-lb	4.45 in.	13.35 in.-lb
	6.0 lb	325.4 in.	1952.4 in.-lb	4.45 in.	26.70 in.-lb
	9.0 lb	325.4 in.	2928.6 in.-lb	4.45 in.	40.05 in.-lb

TABLE 8-1 EMPENNAGE BALLAST WEIGHT AND BALANCE

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CHAPTER 10

PARKING AND STORAGE

10-10 Parking

1. Place cyclic stick in vertical position and apply cyclic friction.
2. Place collective stick full down and apply collective friction.

> **CAUTION**
>
> If using rotor blade tie-downs, do not overtighten tie-down straps (5 lb max tension). Do not pull down on blades to teeter rotor. To lower blade, push up on opposite blade.

3. Open three left-side fuselage access doors, observe placards, and climb steps to access main rotor. Teeter blades by pushing up on one blade until opposite blade contacts teeter stop. Rotate low blade forward. Position rotor blades approximately fore and aft and apply rotor brake.
4. Install main rotor blade tie-downs per § 10-12. Install engine exhaust cover.
5. Close and latch all access doors. Close and latch baggage compartment door.
6. Verify BATTERY switch is OFF, buckle seat harnesses, and close & latch cabin doors (if installed).

10-11 Parking in High Wind or Turbulent Air

A. High Wind or Turbulent Air

Helicopter should be hangared or moved to a safe area during storm conditions or when storm conditions are forecasted. When parking helicopter in high winds, or when aircraft is exposed to prop/rotor wash or jet blast:

1. Position helicopter with nose pointed in direction of prevailing wind or turbulent air.
2. Park helicopter per § 10-10. Position rotor blades slightly offset from fore and aft to prevent aft blade from flapping into tailcone, and apply rotor brake.

B. Extreme Conditions

In extreme conditions, at the operator's discretion:

1. Remove main rotor blades per § 62-10. Remove tail rotor assembly per § 64-10. Store main rotor blades and tail rotor assembly in hangar or safe area.
2. Mark each pitch link & associated swashplate ear with unique identifiers, remove hardware securing pitch links to swashplate and remove pitch links (preferred). Alternately, temporarily secure main rotor pitch links together using ty-raps or safety wire.
3. Remove hardware securing tail rotor pitch links to pitch control assembly & remove pitch links.

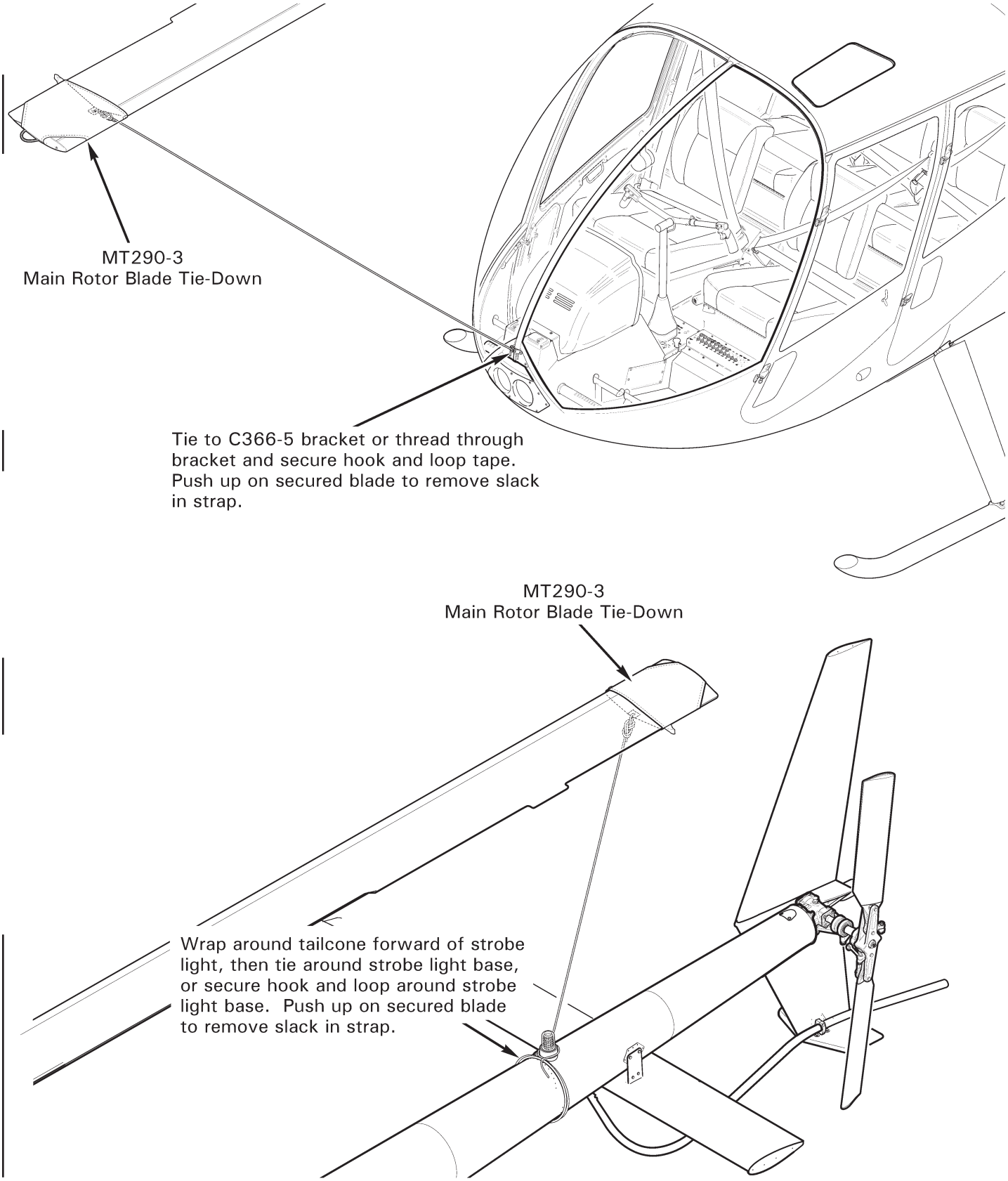

FIGURE 10-1 MAIN ROTOR BLADE TIE-DOWNS

10-12 Main Rotor Blade Tie-Downs

CAUTION

If using rotor blade tie-downs, do not overtighten tie-down straps (5 lb max tension). Do not pull down on blades to teeter rotor. To lower blade, push up on opposite blade.

1. Park helicopter and position blades per §§ 10-10 or 10-11.
2. Refer to Figure 10-1. Slide MT290-3 tie-down jacket over forward (lowered) main rotor blade tip, with white lettering facing down. Tie strap to C366-5 bracket or thread strap through bracket and secure tie-down hook and loop tape. Push up on secured blade to remove slack in tie-down strap.
3. As required, install MT290-3 tie-down on aft main rotor blade. Slide jacket over blade tip, with white lettering facing down. Wrap strap around tailcone forward of strobe light, then tie around strobe light base or secure hook and loop tape around strobe light base. Push up on secured blade to remove slack in tie-down strap.

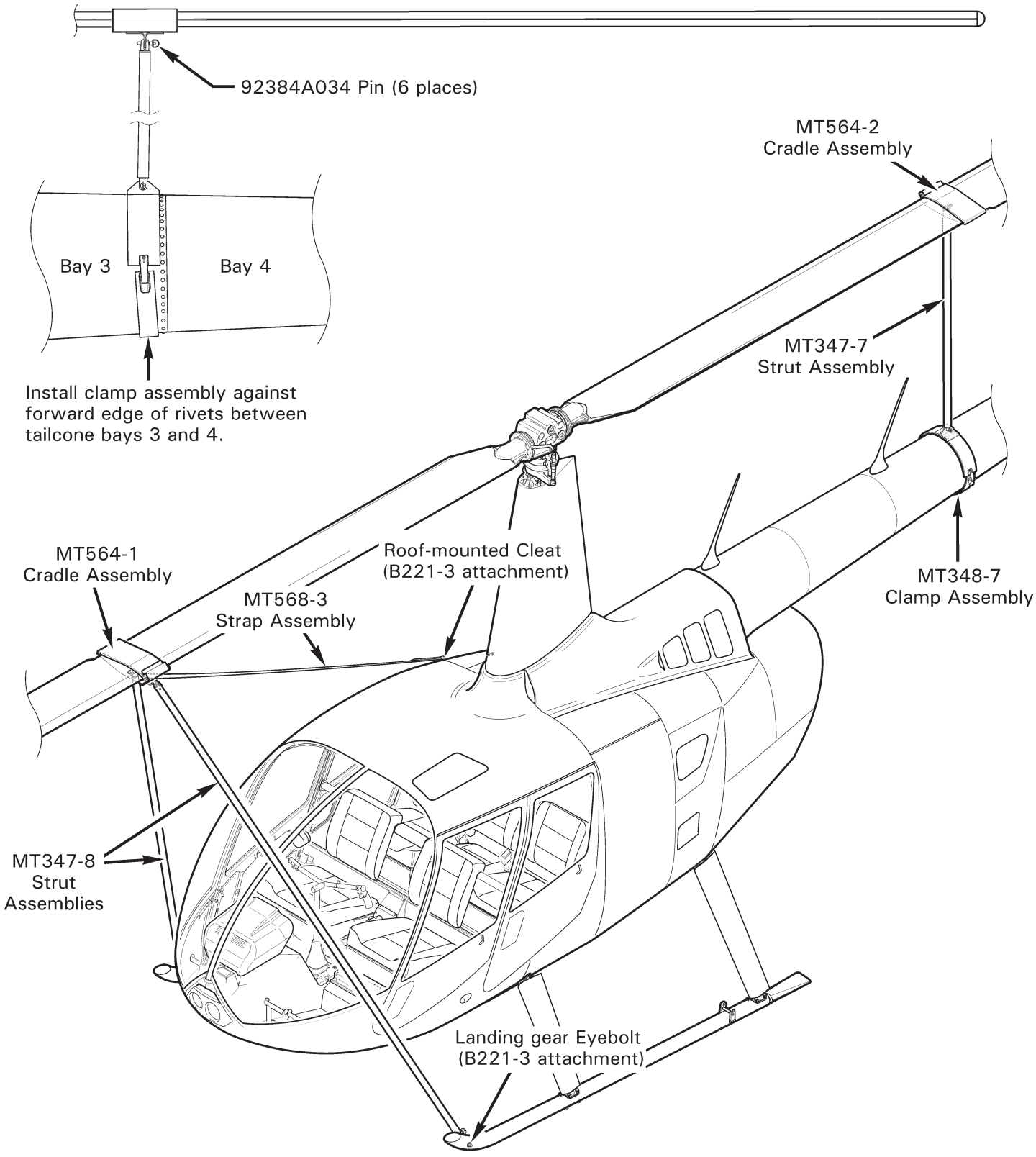

FIGURE 10-2 MAIN ROTOR BLADE SUPPORTS

CHAPTER 18

TRACK AND BALANCE

18-10 Main Rotor Track and Balance

NOTE

Calibrate track and balance equipment per manufacturer's recommendation, at least once a year, or if equipment is dropped, misused, or calibration is suspect.

NOTE

The Chadwick-Helmuth Vibrex system, the TEC ACES system, the Dynamic Solutions Systems' MicroVib system, or equivalent equipment is required to perform dynamic rotor balancing and in-flight track checks.

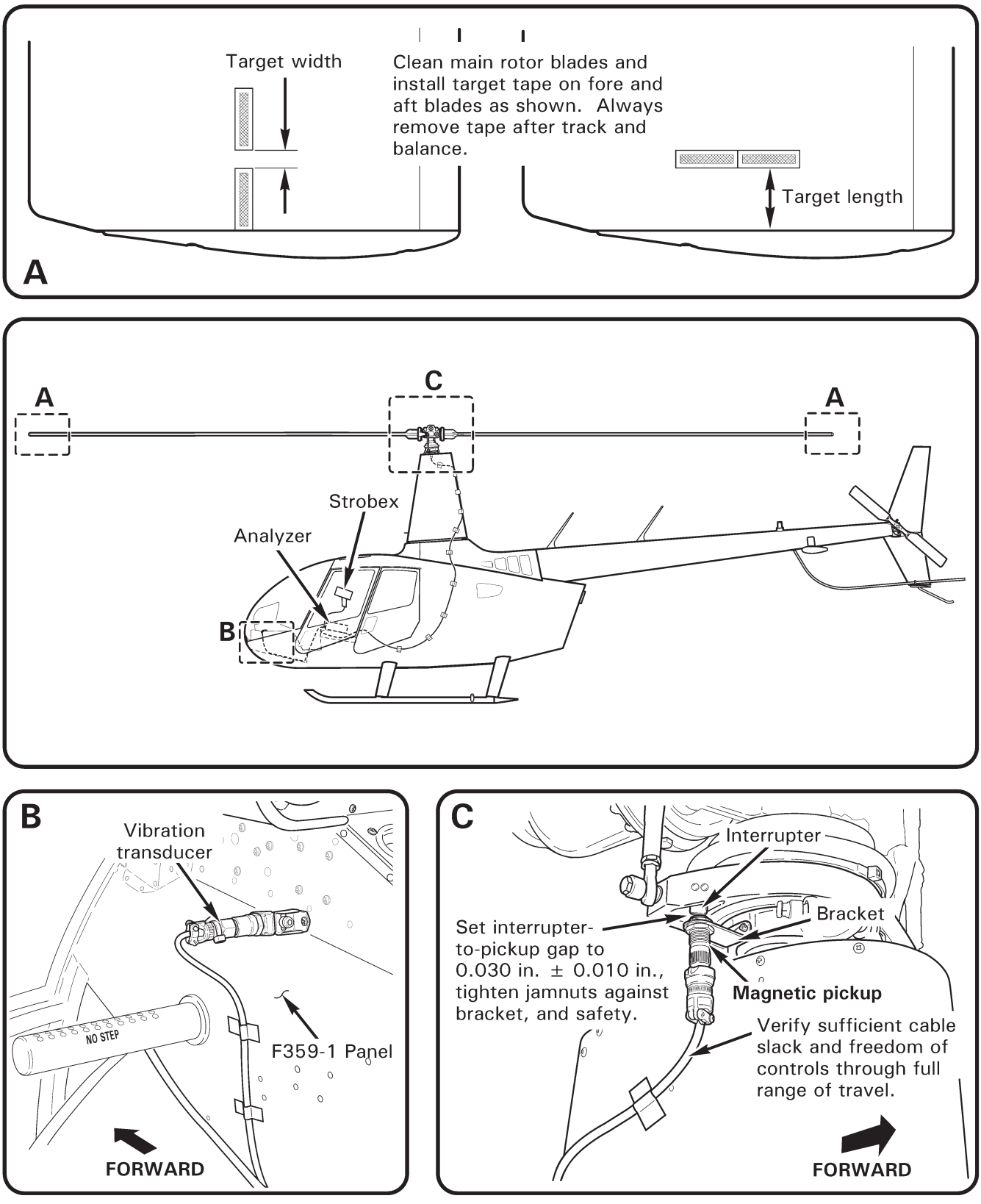

FIGURE 18-1 MAIN ROTOR BALANCING EQUIPMENT INSTALLATION

18-12 Flight Checks

NOTE

Run-up and shutdown helicopter throughout procedure as required per R66 Pilot's Operating Handbook (POH) Section 4.

NOTE

Refer to § 18-15 for track & balance troubleshooting procedures.

WARNING

Tail rotor balancing equipment must be removed for flight.

WARNING

Do not exceed V_{NE} of helicopter during flight checks.

1. Prepare helicopter for main rotor track and balance per § 18-11.
2. As required, print Figure 18-2; use copy to record flight data. Check main rotor blade track in a hover and record data. Maximum permissible blade track difference in a hover is 0.25 inch. Adjust track per § 18-13 as required, record change, and recheck blade track in a hover. Repeat step as required until blade track is within limits.
3. Check main rotor balance in a hover and record data. Maximum vibration allowance is 0.2 ips (inches per second). Adjust balance per § 18-14 as required, record data, and recheck balance in a hover. Repeat step as required until main rotor balance is within limits.
4. Fly helicopter at 50 knots then increase in 10-knot increments up to $V_{NE.}$ Check main rotor blade track at each airspeed and record data. Maximum blade spread between airspeeds is 3/8 inch. Adjust trim tab(s) per § 18-13 as required and record data. Repeat step as required until blade track is within limits.
5. Recheck main rotor balance in a hover per step 3.
6. Perform autorotation RPM check per § 18-16. Recheck main rotor balance in a hover per step 3.
7. Evaluate collective trim, longitudinal cyclic trim, and lateral cyclic trim. Replace D918 cord assemblies as required. Recheck main rotor balance in a hover per step 3.
8. Remove track and balance equipment. Torque stripe fasteners per Figure 5-1. Reinstall removable controls, as required.

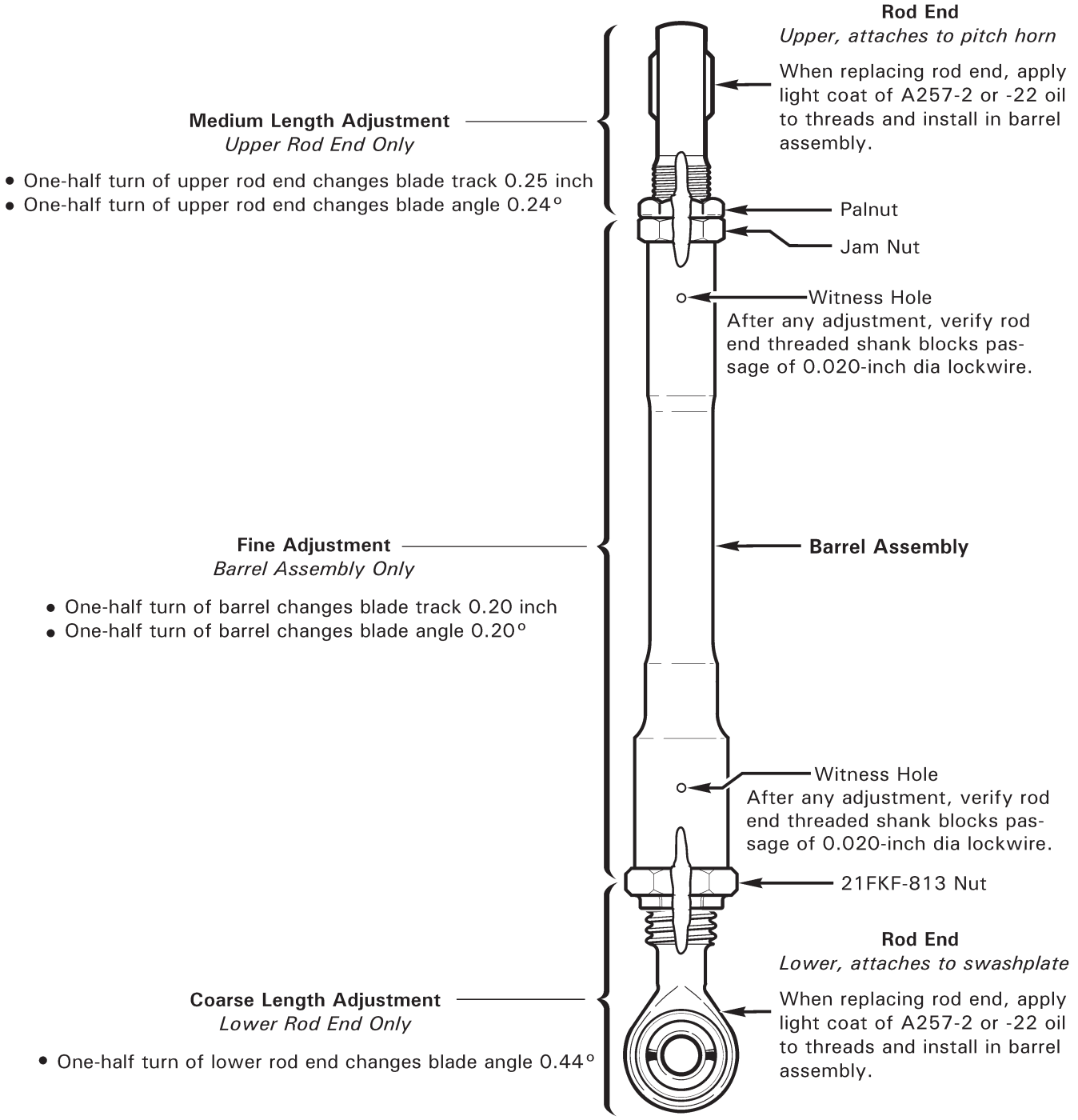

FIGURE 18-3A C258-5 MAIN ROTOR PITCH LINK

18-13 Track Adjustment

A. Main Rotor Blade Pitch Link

NOTE
Shorten high pitch blade when adjusting track in a hover.

NOTE
During rigging, adjust both pitch links exactly the same for collective adjustments.

1. For fine adjustment:

   a. C258-5 Pitch Link: Adjust barrel assembly only per the following steps:

      i. Refer to Figure 18-3A. Using backup wrench on barrel assembly, loosen 21FKF-813 nut at lower rod end, and upper rod end palnut and jam nut.

      ii. Rotate barrel assembly to shorten or lengthen pitch link as required. One-half turn of barrel changes blade track approximately 0.20 inch. One-half turn of barrel changes blade angle approximately 0.20°. For finer adjustment, rotate less than one-half turn as required.

      iii. Refer to Figure 5-1. Verify rod end threaded shank blocks passage of 0.020-inch diameter lockwire through barrel assembly witness holes.

      iv. Position rod ends to allow as much pitch link rotation as possible without binding. Using backup wrench on barrel assembly, special torque 21FKF-813 nut per § 20-33, and standard torque upper rod end jam nut and palnut per § 20-32.

      v. Repeat steps on opposite pitch link as required; torque stripe per Figure 5-1.

   b. C258-1 Pitch Link: Adjust fitting only per the following:

      i. Refer to Figure 18-3B. Cut and discard pitch link assembly safety wire. Using backup wrench on link assembly, loosen 21FKF-813 nut; using backup wrench on fitting, loosen upper rod end palnut and jam nut.

      ii. Rotate fitting to shorten or lengthen pitch link as required. One-half turn of fitting changes blade track approximately 0.20 inch. One-half turn of fitting changes blade angle approximately 0.20°. For finer adjustment, rotate less than one-half turn as required.

      iii. Refer to Figure 5-1. Verify rod end threaded shank blocks passage of 0.020-inch diameter lockwire through pitch link witness holes.

      iv. Using backup wrench on link assembly, special torque 21FKF-813 nut per § 20-33. Using backup wrench on fitting, standard torque upper rod end jam nut and palnut per § 20-32. Safety fitting to link assembly using 0.032-inch diameter lockwire.

      v. Repeat steps on opposite pitch link as required; torque stripe per Figure 5-1.

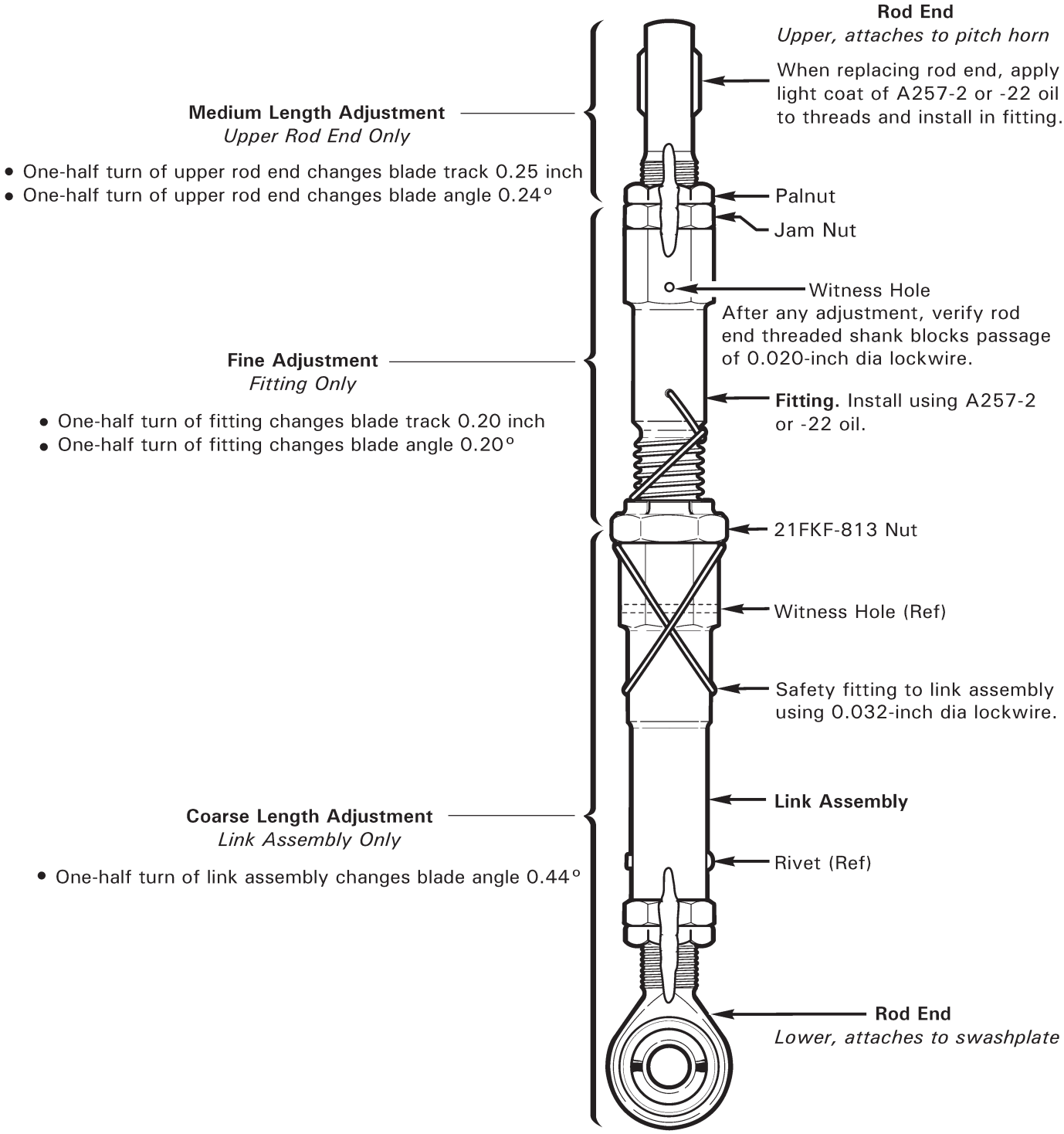

FIGURE 18-3B C258-1 MAIN ROTOR PITCH LINK

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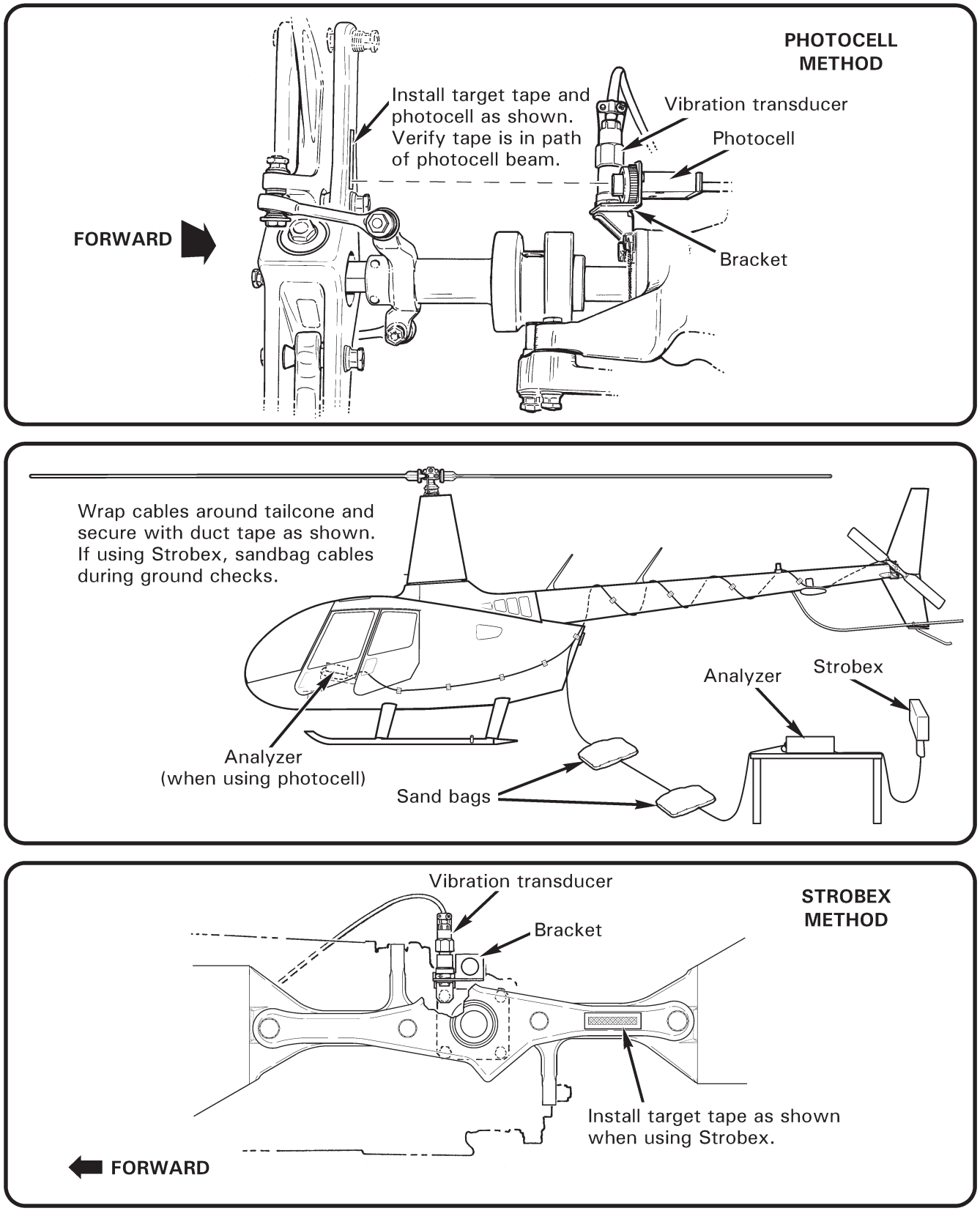


FIGURE 18-6 TAIL ROTOR BALANCING EQUIPMENT INSTALLATION

18-20 Tail Rotor Dynamic Balance

NOTE

Calibrate track and balance equipment per manufacturer's recommendation, at least once a year, or if equipment is dropped, misused, or calibration is suspect.

NOTE

The Chadwick-Helmuth Vibrex system, the TEC ACES system, the Dynamic Solutions Systems' MicroVib system, or equivalent equipment is required to perform dynamic rotor balancing and in-flight track checks.

18-21 Preparing Helicopter for Tail Rotor Dynamic Balance

NOTE

Use the following balance procedures in conjunction with approved equipment manufacturer's balancing instructions.

WARNING

Ensure cable(s) cannot entangle tail rotor.

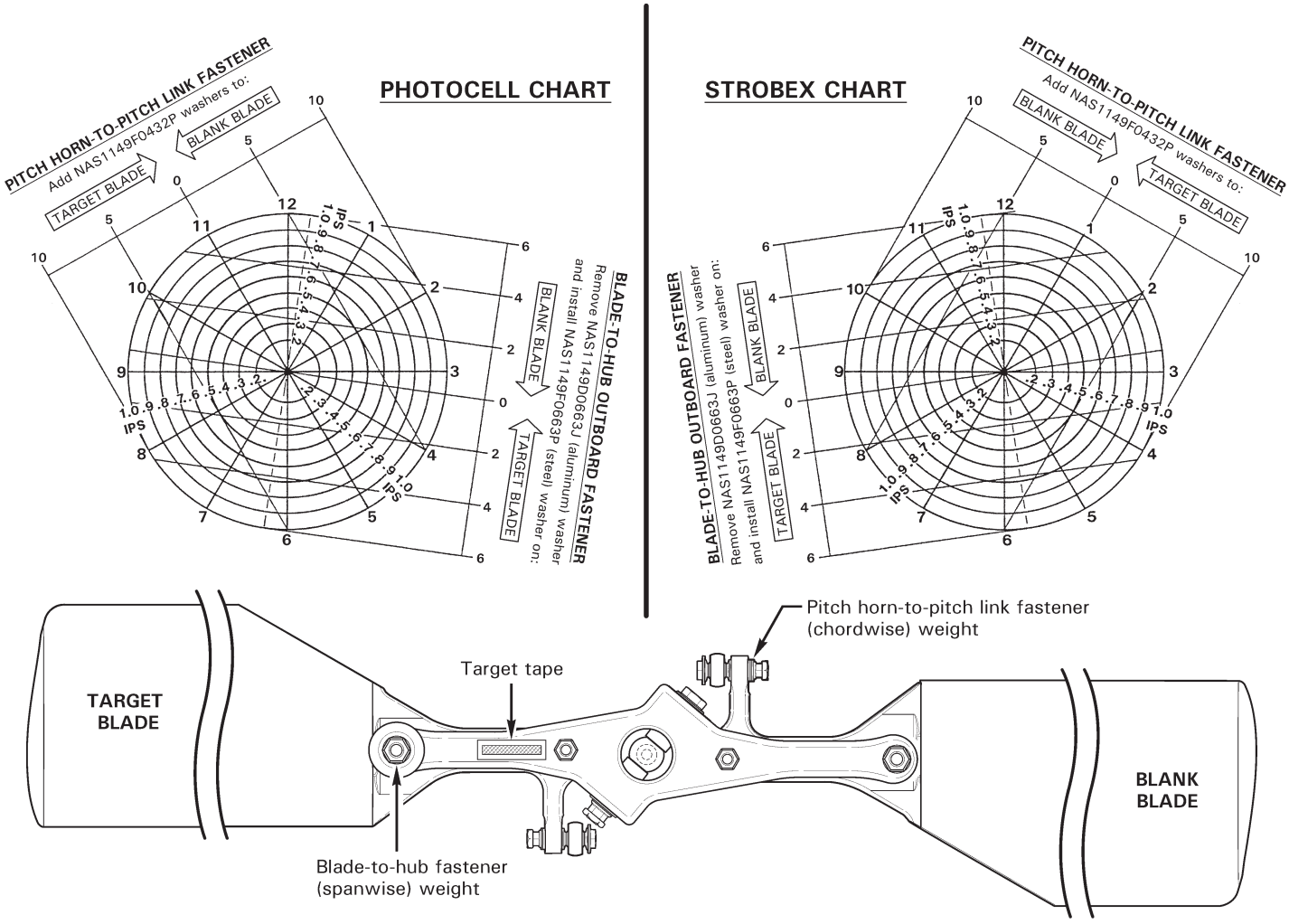
1. Clean tail rotor blades per § 20-10. Inspect tail rotor rod ends and elastomeric bearings per §§ 5-33 and 5-34.
2. Track tail rotor blades per § 18-60, steps 3 & 4. Remove tracking stick.
3. Refer to Figure 18-6. If using photocell to obtain clock angle, install a target tape spanwise on inboard side of one arm of tail rotor hub; if using Strobex, install a target tape spanwise on outboard side of hub.
4. Using appropriate hardware, attach bracket(s) to vibration transducer, and photocell, if used. Secure bracket to tail rotor gearbox output shaft cap at forward, top attachment bolt. Orient vibration transducer vertically.
5. Connect cable(s) to transducer, and photocell, if used. Route cable(s) forward and into cabin; wrap around tailcone several times, and secure with duct tape. If using Strobex, route cable to a position located approximately 20 feet to left of tail rotor. Place sandbags (or similar) on cable to prevent cable movement.
6. Connect cable(s) to balancer. Verify security of installation.

DATE _____ SERIAL NO. _____

PAGE _____

PITCH HORN-TO-PITCH LINK FASTENER (CHORDWISE) WEIGHTS			
(1) NAS1149F0463P Washer	=	(2)	NAS1149F0432P Washers
(1) A214-3 Washer	=	(3.5)	NAS1149F0432P Washers
(1) A141-14 Washer	=	(5)	NAS1149F0432P Washers

BLADE-TO-HUB OUTBOARD FASTENER (SPANWISE) WEIGHTS			
(1) C141-23 Washer	=	(3.5)	NAS1149F0663P Washers
(1) C141-24 Washer	=	(7)	NAS1149F0663P Washers
(2) NAS1149F0632P		(1)	NAS1149F0663P Washer



BALANCE	
CLOCK	IPS

ADJUSTMENT: _____

CLOCK	IPS

ADJUSTMENT: _____

CLOCK	IPS

ADJUSTMENT: _____

CLOCK	IPS

ADJUSTMENT: _____

FIGURE 18-7 TAIL ROTOR DYNAMIC BALANCE CHART

20-33 Special Torques

Special torques supersede standard torques listed in § 20-32.

NOTE

1. Torque values are in inch-pounds unless otherwise specified.
2. Torque values include nut self-locking torque.
3. Increase torque values 10% if torqued at bolt head.
4. Wet indicates threads lubricated with A257-9 anti-seize.
5. For elbow and tee fittings which require alignment, torque to indicated value, then tighten to desired position.
6. Tolerance is ± 10% unless range is specified.
7. Unless otherwise specified, thread sizes 8-32 and smaller are not used for primary structure and do not require control of torques.

AREA	FASTENER	TORQUE (IN.-LB)
AIR CONDITIONING (OPTIONAL EQUIPMENT)	(1) D795-8 line assembly, B-nuts	150
	(1) D799-2 switch assembly	90
	(1) D799-3 switch assembly	90
	(1) D799-9 switch assembly	90
	(1) G783 condenser, dessicant cap	100
	(1) G784-1 evaporator assembly, inlet B-nut to TXV	210
	(1) G794-1 hose assembly, B-nuts	210
	(1) G794-2 hose assembly, B-nuts	210
	(1) G794-3 hose assembly, B-nuts	150
	(1) G810-1 line assembly, B-nuts	210
	(1) G811-1 line assembly, B-nuts	150
	(2) AN924-8D nuts	360
	(8) MS27039C1-07 screws at condenser fans	20
	(2) 91292A135 screws (apply one drop B270-20 adhesive to threads)	70
COOLING SYSTEM (ENGINE AND MAIN ROTOR GEARBOX OILS)	(1) B289-2 bolt, drain	70
	(1) B563-2 sight gage	150
	(1) D205-19 hose assembly, B-nuts	200
	(1) D205-20 hose assembly, B-nuts	200
	(1) F723-1 line assembly, B-nuts	675
	(1) F723-2 line assembly, B-nuts	245
	(1) F723-3 line assembly, B-nuts	245
	(1) F723-4 line assembly, B-nuts	245
	(1) F724-1 line assembly, B-nuts	120
	(1) F724-2 line assembly, B-nuts	285
	(1) F724-3 line assembly, B-nuts	285
	(2) AN815-8D unions, on F649-1 oil cooler	300
	(2) AN832-8D unions, at firewall	230-260

20-33 Special Torques (continued)

AREA	FASTENER	TORQUE (IN.-LB)
COOLING SYSTEM (ENGINE & MAIN GEARBOX OILS) (Cont'd)	(1) AN832-10D union, at firewall	330-360
	(2) AN924-8D nuts, at firewall	150
	(1) AN924-10D nut, at firewall	180
	(2) AN924-6D nuts, securing F823-1 thermostat assembly to firewall	120
	(2) AS5169D04L fitting, on F649-1 oil cooler	58
	(1) MS28034-1 oil temperature sender, to tank	120
DOOR HINGES AND GAS SPRINGS	(16) MS51861-37C screws, securing door hinge assemblies	36
	(2) 21FKF-518 (or 94830A030) nuts, securing G904-1 gas spring ball studs at baggage compartment door	100
	(2) 21FKF-518 (or 94830A030) nuts, securing D575-1 gas spring ball studs at aft doors	100
	(2) C394-2 ball stud, at forward doors, to frame (B270-10 on thds)	150
	(2) D575-2 and (2) D575-3 ball joints, at forward doors' D573-4 rods	37
DRIVE SYSTEM	(2) F650-1 bolt, forward main rotor gearbox and G201 frame mounts	50 FT-LB, wet Bolt head or nut
	(2) F650-2 bolt, aft main rotor gearbox and G201 frame mounts	50 FT-LB, wet Bolt head or nut
ELECTRICAL SYSTEM	(2) MS21044B5 nut, securing A780 cable to B415-2 relay	80
	(1) NAS6605-3 bolt, securing B237-8 battery ground cable to G131-5 terminal assembly	70
EMPENNAGE	(8) NAS6604-6 bolts, securing vertical stabilizers to upper horizontal stabilizer	185
	(1) NAS1352-3-14P screw, securing guard assembly blocks to lower vertical stabilizer	40
	(2) AN814-10D plugs (upper weight only)	100
ENGINE CONTROLS	(1) Fuel control unit (FCU) lever nut	40-50
	(1) Power turbine governor (PTG) lever nut	40-60
	(4) MS21042L3 nut, securing control wires	25-30
ENGINE INDUCTION	(1) A457-16 fitting, IBF filter FMA line	20
	(1) A457-17 fitting, IBF filter FMA line	60
	(1) A457-18 fitting, IBF filter FMA line	3
	(1) G738-1 nozzle, compressor service	30
	(1) AN316-7R nut, compressor service line	150
	(1) AN929-4 cap, compressor service line	60
FUEL SYSTEM	(1) A761-2 valve, sump (B270-6 sealant on threads)	60
	(1) B254-3 strainer, fuel bladder outlet	150
	(1) B283-12 hose assembly, fuel valve to fuel pump inlet, B-nuts	110-130
	(5) B289 bolts, fuel sender	37
	(1) F550 fuel sender center stud nut	11
	(1) B330-6 palnut at fuel sender center stud	9

20-33 Special Torques (continued)

AREA	FASTENER	TORQUE (IN.-LB)
FUEL SYSTEM (Cont'd)	(1) F550 fuel sender ground stud nut	9
	(1) B330-5 palnut at fuel sender ground stud	9
	(1) D205-21 hose assembly, fuel bladder outlet to fuel valve, B-nuts	110-130
	(1) G254-8 (or G254-2) fitting, vent assembly	200
	(1) G254-6 retainer, vent assembly	200
	(1) A880-1005 or AN924-5D nut, low fuel warning switch assembly	150
	(1) D210-3 nut, securing control wire	27
AUXILIARY FUEL SYSTEM	(5) B289-4 bolts, fuel sender	37
	(1) D205-35 hose assembly, nuts (large tank; drain)	120
	(2) D205-36 hose assembly, nuts	120
	(1) D205-37 hose assembly, nuts (small tank; drain)	120
	(1) A761-2 valve (B270-6 sealant on threads)	60
	(2) G764-5 fittings	200
	(1) G768-11 sensor assembly	Finger tighten only
	(1) G768-3 sensor assembly	85
	(1) F550 fuel sender center stud nut	11
	(1) B330-6 palnut at fuel sender center stud	9
	(1) F550 fuel sender ground stud nut	9
	(1) B330-5 palnut at fuel sender ground stud	9
	(2) AN806-6D plugs (when tank assembly removed)	120
	(4) 90825A146 screw	10
	(2) A880-906 or AN815-6D fitting	200
PRESSURE FUELING SYSTEM	(1) A880-1005 nut, A521-6 low fuel switch assy (single)	150
	(1) A880-1005 nut, A521-7 low fuel switch assy (dual)	150
	(1) D205-44 hose assembly, nuts	500
	(1) D205-45 hose assembly, nuts	500
	(2) D745-7 switch assembly, fuel pressure	120
	(1) G989-6 fitting, at G239-1 panel	500
	(1) G990-4 (proximity) sensor assembly, hex nut	60
	(2) G992-1 valve assemblies, shut-off	500
	(4 per valve) G992-1 valve assembly, hex head screws	60
	(2) 10228 fittings (B270-6 or A701-11 pipe threads only)	650
	(1) 10375 adapter (B270-6 or A701-11)	500
FUEL FLOW METER INSTALLATION	(1) 564601 tube assembly, at AS4824N08 seal	325
	(1) 564601 tube assembly, at AS4824N04 seal	145
	(1) SS6565-8-4 fitting, at AS4824N08 seal	325
	(1) SS6565-8-4 fitting, at AS4824N04 seal	145
	(1) AS5178J04 nut, at G155-1 (aft) bracket	145

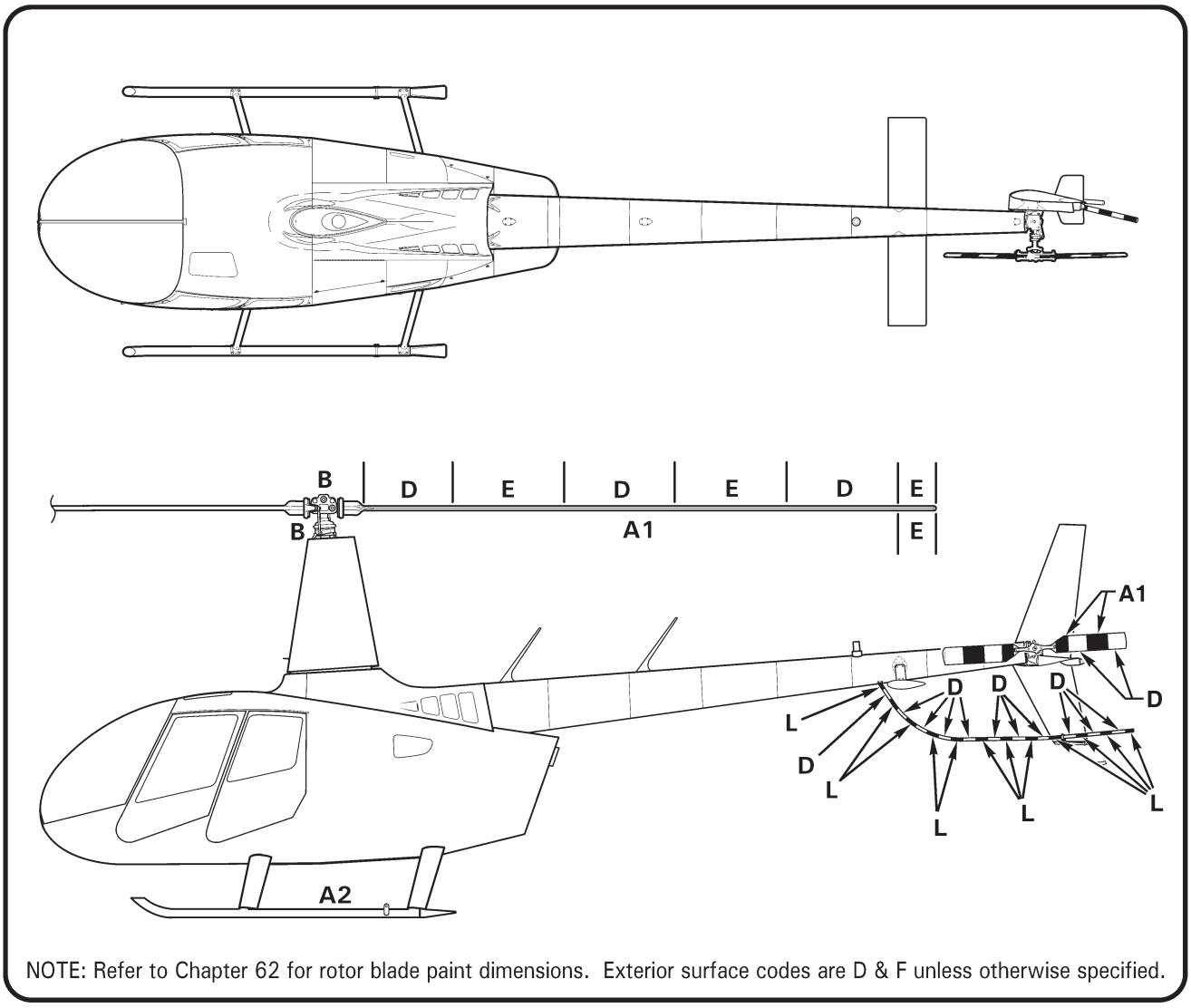
20-33 Special Torques (continued)

AREA	FASTENER	TORQUE (IN.-LB)
FUSELAGE	(1) D210-5 nut, ground handling ball	240
	(4) NAS6604-3 bolts, securing F050-2 stabilizer to tailcone	185
	(4) NAS6603-2 bolts, securing F050-2 stabilizer to F955-1 bracket	70
HEATER	(1) G391-1 line assembly B-nuts (apply A257-9 to upper nut threads)	245 wet
	(1) G391-2 line assembly B-nuts	100
	(1) G391-3 line assembly B-nuts	100
	(1) G391-4 line assembly B-nuts	100
	(1) G391-5 line assembly B-nuts	230-260
	(2) G392-3 diffuser assembly B-nuts	100
	(1) D210-3 nut, securing control wire	25–30
HYDRAULIC HOSES & FITTINGS	(2) AN815-3D union	95–105
	(2) AN815-4D union	135–150
	(1) AN820-4 cap, on reservoir AN804D4 T-fitting	60
	(1) AN820-6 cap, on reservoir AN834-6D T-fitting	120
	(2) D452-3 nuts, on aft and left hand servos	60
	(3) D452-4 nuts, on aft and left hand servos and on reservoir	90
	(1) D452-6 nut, on reservoir	150
	(2) B330-19 palnut, on aft and left hand servos	30
	(3) B330-21 palnut, on aft and left servos and on reservoir	45
	(1) B330-25 palnut, on reservoir	75
	(1) D205-14 line assembly B-nuts	95–105
	(1) D205-17 line assembly B-nuts	95–105
	(1) D205-18 line assembly B-nuts	135–150
	(1) D205-22 line assembly B-nuts	95–105
	(1) D205-23 line assembly B-nuts	135–150
	(1) D205-24 line assembly B-nuts	135–150
	(2) F902-1 line assembly B-nuts	135–150
	(2) F902-2 line assembly B-nuts	110–130
HYDRAULIC RESERVOIR	(1) D487-3, filler-vent	100
	(1) D516-1, filter cap	150
	(1) B563-2, sight gage	150
	(1) D507-2 solenoid	100
HYDRAULIC SERVOS	(1) D210-08 nut, attaching D200-2 scissors	25
	(1) B330-6 palnut on D200-2 scissor apex fastener	5-10
LANDING GEAR	(4) NAS6604-46 bolts, securing ground handling wheel support weldments to skid tubes	70
	(4) NAS6607P20 bolt, securing landing gear to fuselage supports and shackles	66 FT-LB
	(2) NAS6607P44 bolt, securing shackles to fuselage	66 FT-LB
	(4) B277-28 clamp, securing fairings to struts	15

20-76 Powder Coat

PRODUCT	MANUFACTURER
Interpon 100-AL101QF Gray Zinc Rich Epoxy Powder*	AkzoNobel Santa Fe Springs, CA
81-2158 Vitralon Grey Zinc Rich Epoxy Powder*	Pratt & Lambert Chemical Coatings Buffalo, NY
39/80020 Smooth Matte Black Polyester Topcoat Powder*	Tiger Drylac USA Cucamonga, CA
49/72460 Smooth Glossy Gray RAL 7043 Polyester Topcoat Powder*	Tiger Drylac USA Cucamonga, CA
49/22460 Smooth Glossy Yellow RAL 1028 Polyester Topcoat Powder*	Tiger Drylac USA Cucamonga, CA
PFWF104S9 White Polyester Topcoat Powder*	Dupont Co. Wilmington, DE

* Shelf life is 12 months from date of manufacture at ambient temperature.



NOTE: Refer to Chapter 62 for rotor blade paint dimensions. Exterior surface codes are D & F unless otherwise specified.

FIGURE 20-3 PAINT CODES

20-77 Paints

Refer to Figures 20-3 & 20-4 for paint code application. Paint codes for specific helicopter serial numbers are listed on the inside cover of Airframe Maintenance Record (logbook).

FINISH CODE	MATERIAL*	ADDITIVES	MANUFACTURER	RHC PART NO.	APPLICATION
A1	Flat Black 18BK006	18BK006CAT Catalyst	PPG Aerospace; Irvine, CA	18BK006	Blade black
	Abrasion Resistant 23T3-90 Black	PC-216 Curing Solution	AkzoNobel; Waukegan, IL	23T3-90	
A2	FR2-55 Mat Topcoat	Thinner: water	Mapaero; Pamiers, France	557Z7038B005K	Interior, skid tube, windshield and window trim black
	Aerofine 8250 Topcoat	Thinner: water	AkzoNobel; Waukegan, IL	A8250/F9007	

CHAPTER 22

AUTOPILOT

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22-40 Control Panel (continued)

A. Removal

1. Turn battery & avionics switches off and pull out AUTOPILOT (5 amp) circuit breaker at panel.
2. Loosen quarter-turn fasteners securing control panel to console assembly.
3. Carefully unplug harness from control panel and remove panel.

B. Installation

1. Turn battery & avionics switches off and pull out AUTOPILOT (5 amp) circuit breaker at panel.
2. Carefully plug-in harness to control panel.
3. Tighten quarter-turn fasteners securing control panel to console assembly. Verify security.
4. Push in AUTOPILOT circuit breaker (5 amp) at panel. Perform ground checks as appropriate per § 22-61.

22-50 Cyclic Grip Assembly

A. Grip Angle Adjustment

1. Loosen cap screws securing pilot's cyclic grip, block assembly, and bar to grip weldment.
2. Rotate grip about weldment to desired angle. Special torque cap screws to 40 in.-lb.

B. Removal and Installation

To access grip switches:

1. Remove MS24693-S1 screws securing C214-27 plate to D379-1 grip. Remove switch nuts and lockwashers to free switches from plate.
2. Install switch lockwashers (new) and nuts and tighten switches to plate; verify switch security. Install screws securing plate to grip.
3. Turn battery switch on and perform ground checks as appropriate per § 22-61.

C. Schematic

Refer to Figure 98-1 for F024 electrical system schematic.

22-60 Maintenance

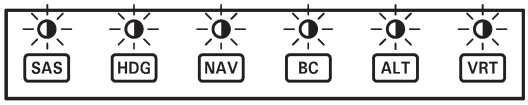
22-61 Ground Checks

NOTE
Perform the following ground checks after component replacement or other repairs have been performed on the autopilot system. Perform ground checks after any incident that may have affected autopilot or related equipment prior to return to service.

NOTE
Refer to § 22-62 for troubleshooting if any of the following ground checks cannot be verified.

1. Turn battery & avionics switches on. Verify four beeps in headset and control panel LEDS alternate white/green:

FOUR BEEPS IN HEADSET

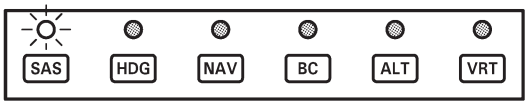


LEDs ALTERNATE WHITE/GREEN

(01309-01-01 control panel shown)

2. Verify SAS enters standby mode approximately 6 seconds after PFD aligns. Verify no sound in headset and control panel SAS LED is white, other LEDs are dark:

NO SOUND

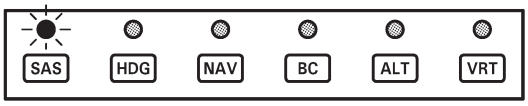


SAS LED IS WHITE, OTHER LEDs DARK

3. With cyclic friction full off, verify cyclic moves freely within hydraulic servo longitudinal and lateral deadbands.

4. Engage SAS mode (cyclic should feel "energized"). Verify no sound in headset and control panel SAS LED is green, other LEDs are dark:

NO SOUND



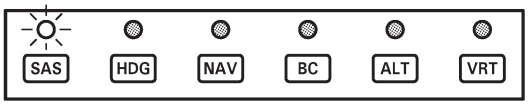
SAS LED IS GREEN, OTHER LEDS DARK

5. With SAS engaged, displace cyclic at least 1 inch from neutral position and verify a vibrating resistance is encountered. Perform check for roll & pitch axes.

22-61 Ground Checks (continued)

6. Refer to step 2. Engage SAS and verify SAS disengages when control panel's SAS button is depressed or when AP OFF button on the cyclic grip is depressed. Verify four beeps in headset and control panel SAS LED is white, other LEDs are dark:

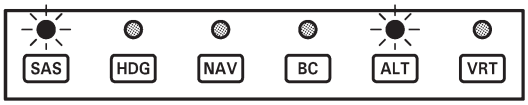
FOUR BEEPS IN HEADSET



SAS LED IS WHITE, OTHER LEDS DARK

7. Perform pitot system leak test per § 95-10 and, while airspeed indicates > 50 knots: Engage SAS and ALT modes. Verify no sound in headset and SAS & ALT LEDs are green, other LEDs are dark:

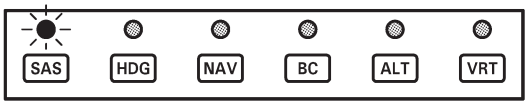
NO SOUND



SAS & ALT LEDs ARE GREEN, OTHER LEDS DARK

8. Disengage ALT mode. Verify no sound in headset and SAS LED is green, other LEDs are dark:

NO SOUND



SAS LED IS GREEN, OTHER LEDS DARK

9. Refer to steps 7 & 8. Engage SAS and HDG modes. Verify no sound in headset and SAS & HDG LEDs are green, other LEDs are dark. Disengage HDG mode. Verify no sound in headset and SAS LED is green, other LEDs are dark.

10. Engage SAS, HDG, and ALT modes. Verify no sound in headset and SAS, HDG, and ALT LEDs are green, other LEDs are dark. Press AP OFF button on cyclic grip. Verify no sound in headset and SAS LED is green, other LEDs are dark.

11. Engage SAS, HDG, and ALT modes. Verify no sound in headset and SAS, HDG, and ALT LEDs are green, other LEDs are dark. Press AP OFF button twice on cyclic grip. Verify four beeps in headset and SAS LED is white, other LEDs are dark.

22-62 Troubleshooting

CAUTION

Adjustment to autopilot equipment is not permitted.

PROBLEM	ACTION
Control panel lights do not illuminate or flash when master switch is turned on.	Verify computer is getting power.
	Return computer to RHC.
System does not enter standby-mode (lights flash continuously).	Verify attitude indicator bank angle less than 6 degrees.
	Verify attitude indicator output between 13 and 14 pins is less than 0.3 volts at connector.
	Check wiring between attitude indicator and computer.
	Contact RHC Technical Support.
SAS does not engage when TRIM button depressed for longer than 1.25 seconds; pressing TRIM button does not reset reference attitude; pressing TRIM button does not reset reference altitude in altitude hold.	Check wiring between TRIM button and computer.
	Verify integrity of TRIM button.
	Return computer to RHC.
SAS does not disengage when cyclic grip AP OFF button depressed.	Check wiring between AP OFF button and computer.
	Verify integrity of AP OFF button.
	Return computer to RHC.
SAS does not engage or disengage when control panel buttons pressed.	Engage and/or disengage SAS using cyclic grip buttons. If system responds properly, failure is in control panel or associated wiring to computer.
	Contact RHC Technical Support.
SAS does not hold pitch attitude, but holds roll attitude or vice versa.	Check servo-to-cyclic linkage.
	Check wiring between faulty servo and computer.
	Return faulty servo and computer to RHC.
SAS disengages unintentionally (accompanied by four beeps in headset).	Contact RHC Technical Support.
Autopilot mode disengages unintentionally, and reverts to SAS mode (accompanied by single beep in headset).	Determine if navigation signal may have gone invalid due to operational reason.
	Check wiring between appropriate instrument/ avionics and computer.
	Check instrument/avionics for failure flags (steady and intermittent).
Cyclic vibrates erratically, SAS does not disengage.	Manually override SAS, system should disengage automatically.
	Contact RHC Technical Support.
Helicopter enters low frequency pitch oscillation when ALT engaged; helicopter diverges nose-up or nose-down when ALT engaged.	Return computer to RHC.

22-62 Troubleshooting (continued)

PROBLEM	ACTION
ILS glideslope tracking performance is poor.	Check for excessive friction in longitudinal cyclic.
	Check GPS output to computer.
Cyclic force seems higher than normal with SAS disengaged.	Verify servo clutches are disengaged, and clutch arms do not move when SAS is Off or in stand-by-mode.
No aural warning in headset when SAS is disengaged.	Check wiring to unswitched audio input to audio panel.

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32-40 Fairing Assemblies

A. Removal

1. Refer to Figure 32-3. Remove screws securing fairing assembly together at trailing edge.
2. Remove screws securing fairing assembly to strut assembly. Unscrew clamp through fairing inboard access hole and remove fairing.

B. Installation

1. Refer to Figure 32-3. Verify fairing assembly clip nuts are installed. Verify clamp threads through fairing clips, with hex facing inboard access hole.
2. Position fairing assembly on strut assembly and install screws securing fairing to strut.
3. Tighten clamp, and special torque hex through fairing assembly inboard access hole per § 20-33.
4. Install screws securing fairing assembly together at trailing edge.
5. Verify 0.20–0.30 inch clearance between fairing assembly edge and fuselage. Remove and trim fairing as required; reinstall per preceding steps.

32-50 Maintenance

1. Refer to Figure 32-3. Verify drain holes in bottom of skid tubes are free of obstructions (two per skid, between two forward skid shoes and aft of skid shoe at forward strut assembly).
2. Refinish landing gear to prevent corrosion per Chapter 20.
3. Inspect skid tubes and skid shoes per § 32-30, especially following touch-down autorotations or running take-offs or landings.
4. Verify skid tube and strut assembly rain caps are properly sealed. Replace or re-seal rain caps per the following:
   a. Using putty knife or plastic scraper, cut sealant securing rain cap to landing gear assembly and remove cap. Remove sealant residue from caps, cross tubes, and/or strut assemblies. Clean surfaces with solvent.
   b. Verify rain caps and bonding surfaces are clean and dry. Bond caps to landing gear assembly using B270-1 sealant. Mix sealant according to manufacturer's instructions.

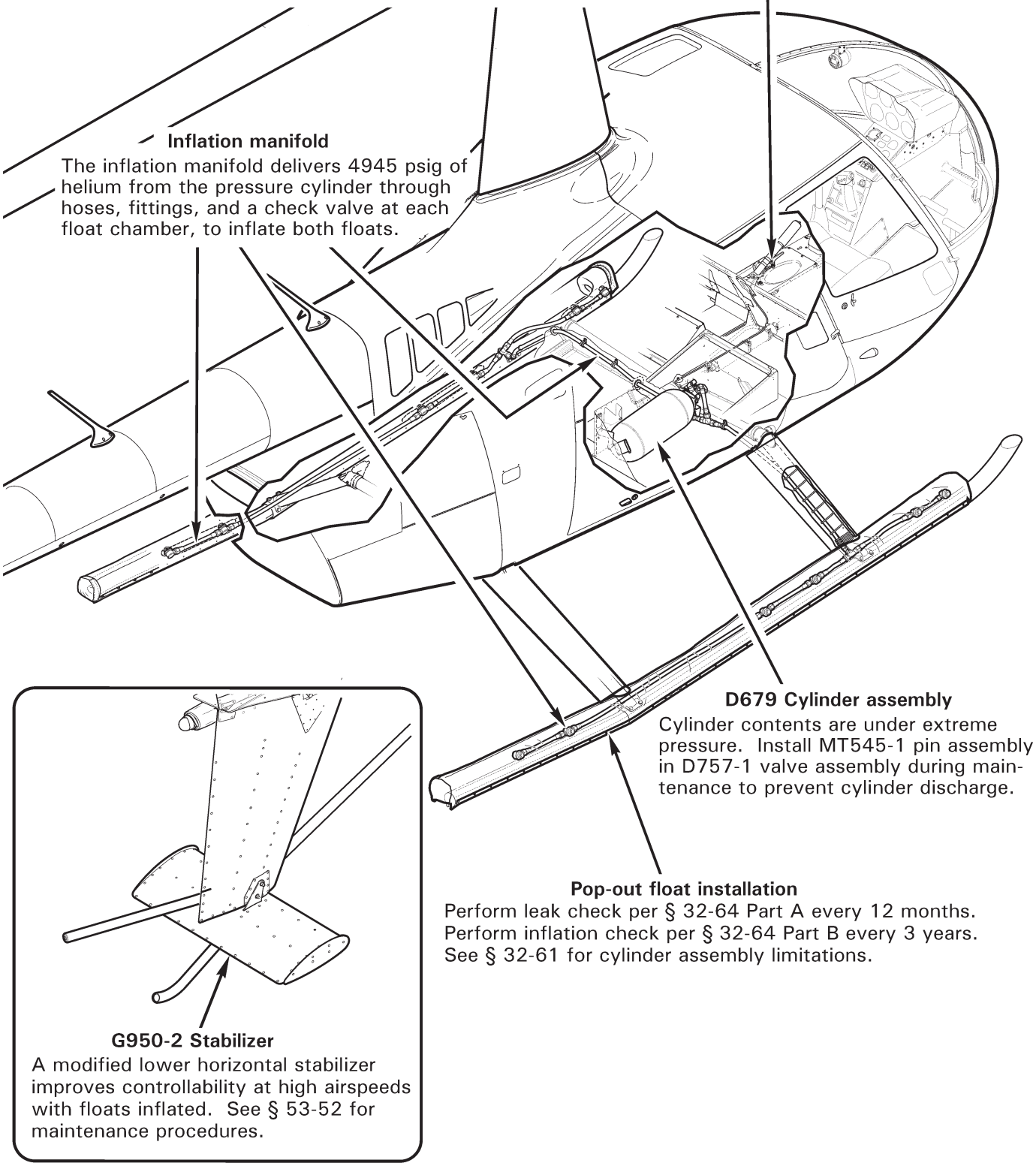

FIGURE 32-4 POP-OUT FLOATS INSTALLATION

CHAPTER 33

LIGHTS

33-00 Description

A red anti-collision light is installed on the tailcone and is controlled by the strobe switch. Position lights are installed on each side of the cabin and in the tail and are controlled by the nav lights switch. A light at the top of the windshield and post lights illuminate the instrument panel. Panel lighting is active when the nav lights switch is on and lighting is dimmed via the knob above the nav lights switch. An overhead map light mounted on a swivel is controlled by an adjacent switch with high and low settings. The map light may be used for emergency lighting of the instrument panel. An additional cabin light with an adjacent switch is located just aft of the map light. The map and cabin lights are not connected to the dimmer circuit.

Two long-life, high intensity discharge (HID) landing lights are installed in the nose. One wide-angle and one narrow-beam light are used to increase lighted area. One landing light switch controls both lights and is located on the cyclic center post.

NOTE

Continuous operation of landing and position lights in flight is recommended to promote collision avoidance.

An optional flashing light may be mounted on the tailcone in addition to the standard anti-collision light. On earlier aircraft, the optional light is controlled by an additional position on the strobe switch. On later aircraft, the optional light is controlled by a separate switch.

33-10 Exterior Lights

33-11 Strobe Light(s)

A. Removal

1. Turn battery switch off. Pull out STROBE circuit breaker (5 amp, or 7½ amp if forward strobe is installed) at panel.
2. Remove hardware securing A708 strobe light assembly's retainer, lens, and gasket to light assembly.
3. Remove hardware securing light assembly to tailcone mount.
4. Remove hardware securing ground wire, if ground is installed at mount. Disconnect light assembly harness from airframe harness and remove light assembly.

33-11 Strobe Light(s) (continued)

B. Installation

1. Turn battery switch off. Pull out STROBE circuit breaker (5 amp, or 7½ amp if forward strobe is installed) at panel.
2. Install hardware securing A708 strobe light assembly's ground wire to tailcone mount, if ground is installed at mount. Connect light assembly's harness to airframe harness at connectors.
3. Install hardware securing light assembly to tailcone mount (white forward strobe: two missing columns of LEDs facing forward). Verify security.
4. Install hardware securing light assembly's gasket, lens, and retainer to light assembly. Verify security.
5. Push in STROBE circuit breaker (5 amp, or 7½ amp if forward strobe is installed) at panel. Turn battery switch and strobe switch(es) on and verify function. Turn battery switch off.

33-12 Navigation Lights

A. Removal

1. Turn battery switch off. Pull out LTS circuit breaker (5 amp) at panel.
2. a. Position Lights: Remove screw securing retainer, lens, and gasket to light assembly. Remove hardware securing light assembly, gasket, and ground wire to chin. Cut and discard ty-rap securing excess wire to light assembly, pull out light assembly, and disconnect light assembly harness from airframe harness at connector.

   b. Tail Light: Remove screws securing retainer, lens, gasket, and light assembly to C529-1 mount assembly. Pull out light assembly and disconnect light assembly harness from airframe harness at connector.

B. Installation

1. Turn battery switch off. Pull out LTS circuit breaker (5 amp) at panel.
2. a. Position Lights: Connect light assembly harness to airframe harness at connector. Install hardware securing light assembly, gasket, and ground wire to chin. Verify security. Install ty-rap securing excess wire to light assembly. Cinch ty-rap until snug without over-tightening, and trim tip flush with head. Install screw securing retainer, lens, and gasket to light assembly. Verify security.

   b. Tail Light: Connect light assembly harness to airframe harness at connector. Install screws securing retainer, lens, gasket, and light assembly to C529-1 mount assembly. Verify security.

3. Push in LTS circuit breaker (5 amp) at panel. Turn battery switch and LTS switch on and verify function. Turn battery switch and LTS switch off.

CHAPTER 53

FUSELAGE

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53-40 Tailcone Assembly

A. Removal

1. Remove tailcone cowling assembly per § 53-23. Remove engine cowling assembly per § 53-21.
2. Refer to Figure 53-4. Cut and discard ty-raps as required and disconnect tailcone wiring at connectors. Disconnect two antenna cables inside tailcone forward bay, and cables at forward bulkhead, as required.
3. Remove hardware securing D224 tail rotor drive shaft yoke to C947-3 (intermediate) plate assembly, noting hardware removed.
4. Remove hardware securing C121-17 push-pull tube to A331-4 bellcrank assembly.
5. Remove hardware securing C023 tailcone assembly to frames and remove tailcone.
6. Cut and discard ty-raps as required and remove F237-1 tailcone attachment frame, as required.

B. Installation

CAUTION

C004-2 or -3 empennage assemblies may only be installed on C023-21, -24, -34, & -35 Rev AV and prior tailcone assemblies; F004-2 empennage assemblies may only be installed on C023-21, -24, -34, & -35 Rev AW and subsequent tailcone assemblies.

1. Refer to Figure 53-4. Install F237-1 tailcone attachment frame, if not previously accomplished. Verify correct damper assembly orientation per Figure 65-3.
2. Position C023 tailcone assembly on F020-1 upper frame assembly; do not pinch wiring between tailcone bulkhead and frames. Install hardware securing tailcone to frames, standard torque bolts per § 20-32, and torque stripe per Figure 5-1.
3. Install hardware securing D224 tail rotor drive shaft yoke to C947-3 (intermediate) plate assembly. Shim tail rotor driveline per § 65-30. Standard torque bolts per § 20-32, and torque stripe per Figure 5-1.
4. Install hardware securing C121-17 push-pull tube to A331-4 bellcrank assembly. Standard torque bolt per § 20-32, and torque stripe per Figure 5-1.
5. Perform tail rotor drive shaft runout per § 65-21.
6. Connect tailcone wiring at connectors, connect two antenna cables inside tailcone forward bay, and connect antenna cables at forward bulkhead, as required. Individually test and verify correct function of tail position light, strobe, and TR chip light circuits.
7. Install MS3367-4-9 or -5-9 ty-raps as required to secure wire harness and cables to frame. Cinch ty-raps until snug without over-tightening, and trim tips flush with heads.
8. Install tailcone cowling assembly per § 53-23. Install engine cowling assembly per § 53-21.

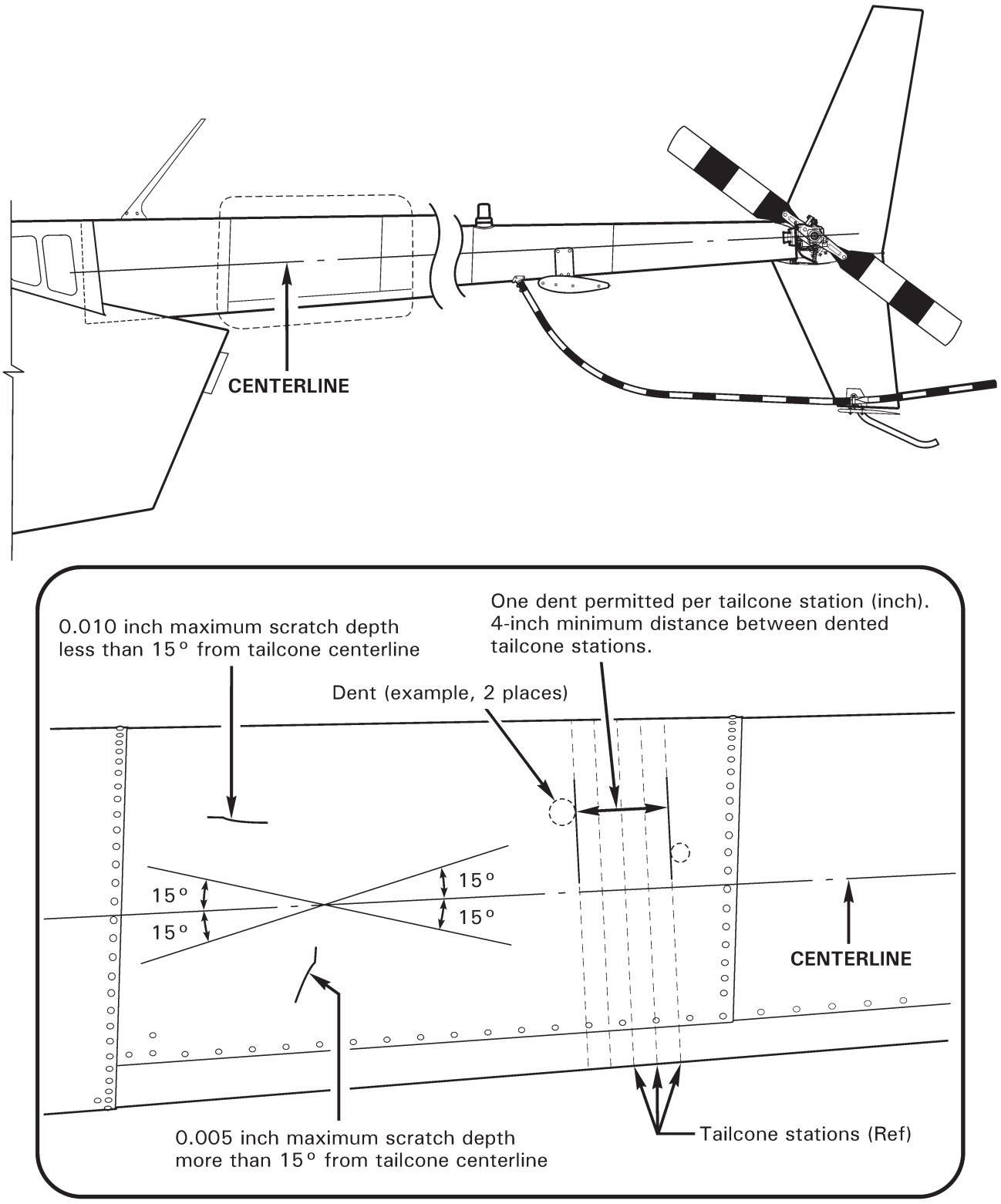


FIGURE 53-5 TAILCONE INSPECTION AND REPAIR

53-41 Inspection and Repair

This procedure outlines the inspection criteria and repair limits for the tailcone assembly. Repairs are limited to blending out scratches and refinishing skins. Contact RHC Technical Support if allowable damage is exceeded.

A. Scratches

1. Refer to Figure 53-5. Verify damage does not exceed the following limits:
    a. 0.005 inch maximum scratch depth more than 15° from tailcone centerline.
    b. 0.010 inch maximum scratch depth less than 15° from tailcone centerline.
2. If damage exceeds limits, return tailcone assembly to RHC for repair. If damage is within limits, blend out scratches with a 0.10 inch minimum blend radius. Refinish skins using approved materials per § 20-70.

B. Dents

1. Refer to Figure 53-5. Smooth, round bottom dents with 0.125 inch minimum radius without sharp nicks or cracks are acceptable when damage does not exceed the following limits:
    a. 0.030 inch maximum dent depth.
    b. 1.250 inch maximum dent diameter.
    c. One dent permitted per tailcone station (inch).
    d. 4.000 inch minimum distance between dented tailcone stations.
2. If damage exceeds limits, replace tailcone or return to RHC for repair.

53-50 Tail Rotor Guard Assembly

A. Removal

1. Refer to Figure 53-8. Loosen two (forward) fasteners securing D081-2 block and D079-1 guard assembly to C043-1 lower vertical stabilizer.
2. Remove hardware securing guard to D082-1 tube assembly. Slide guard off of tube, then forward through blocks. Remove D081-1 spacer from tube.

B. Installation

CAUTION

Do not install D079-1 revision U or prior tail rotor guard assembly on R66 helicopters.

1. Refer to Figure 53-8. Loosen two (forward) fasteners securing D081-2 block to C043-1 lower vertical stabilizer, if not previously accomplished. Insert D079-1 guard assembly aft through blocks.
2. Lightly coat retaining hardware and mating surfaces of D082-1 tube assembly and D079-1 guard assembly with § 20-70 approved primer, prior to installation.
3. Install D081-1 spacer inside tube. While wet with primer, slide guard onto tube and install hardware. Standard torque bolts per § 20-32, and torque stripe per Figure 5-1. Seal around end of guard with primer after assembly.
4. Verify D081 blocks clamp guard sleeve. For proper guard-to-stabilizer clamping, first standard torque (forward, top) NAS1351-4-53P screw and associate hardware per § 20-32, then special torque (forward, bottom) NAS1352-3-14P screw and associate hardware per § 20-33. Torque stripe fasteners per Figure 5-1.

53-60 F050-2 Horizontal Stabilizer Assembly

CAUTION

F955-1 bracket is riveted to bottom of tailcone assembly. Support F050-2 horizontal stabilizer assembly during removal or installation when upper bolts are removed.

A. Removal

1. Refer to Figure 53-6. Remove hardware securing F050-2 horizontal stabilizer assembly to F955-1 bracket.
2. Supporting stabilizer, remove hardware securing stabilizer to tailcone assembly and remove stabilizer.
3. As required, install MT023-2 stabilizer bracket supports using removed hardware (recommended when stabilizer is removed).

53-60 F050-2 Horizontal Stabilizer Assembly (continued)

B. Installation

1. If installed, remove hardware securing MT023-2 stabilizer bracket supports to F955-1 bracket & tailcone assembly and remove supports.
2. Supporting F050-2 horizontal stabilizer assembly, install hardware securing stabilizer to tailcone and bracket. Special torque bolts per § 20-33 and torque stripe per Figure 5-1.

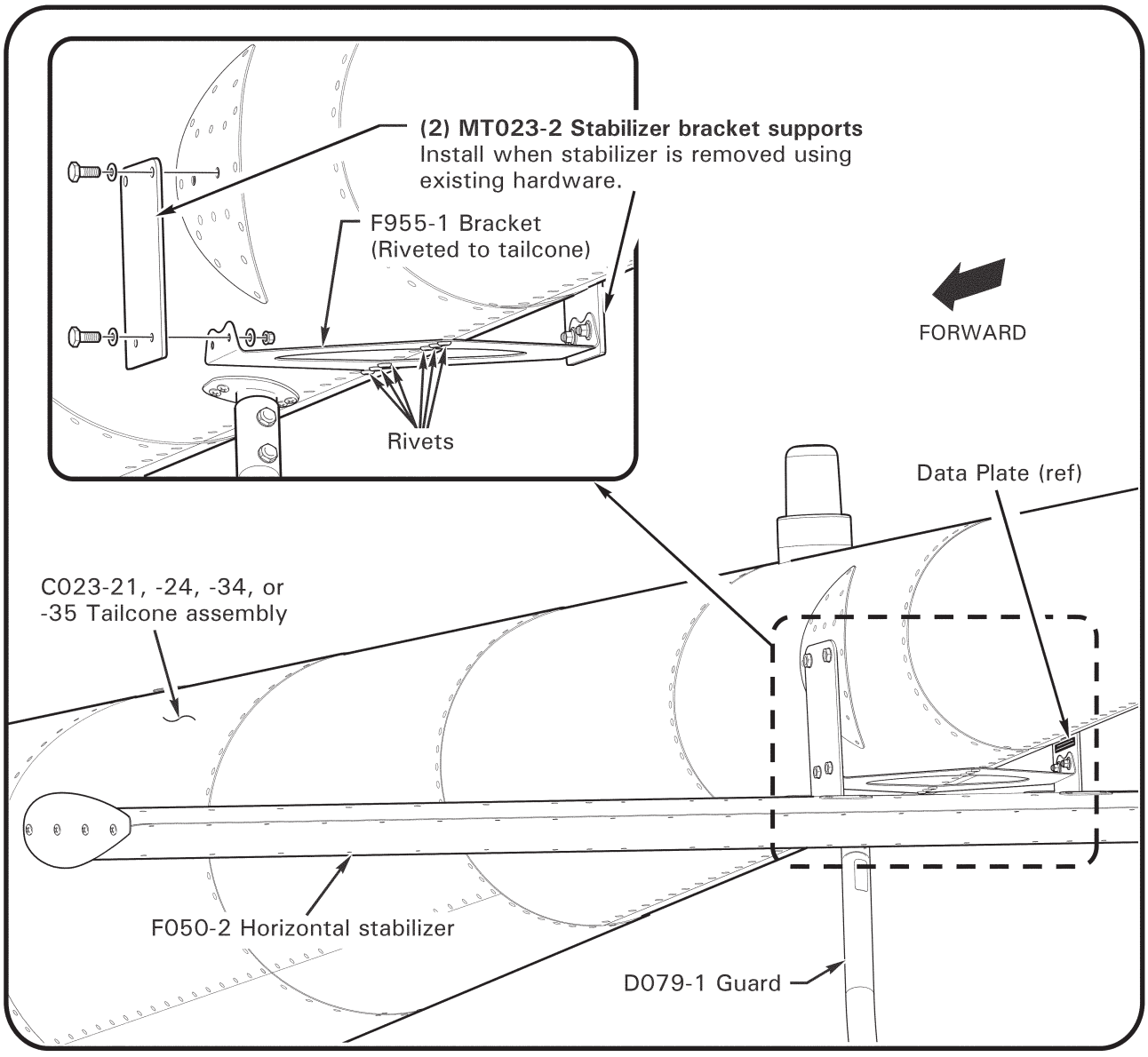


FIGURE 53-6 F050-2 HORIZONTAL STABILIZER ASSEMBLY

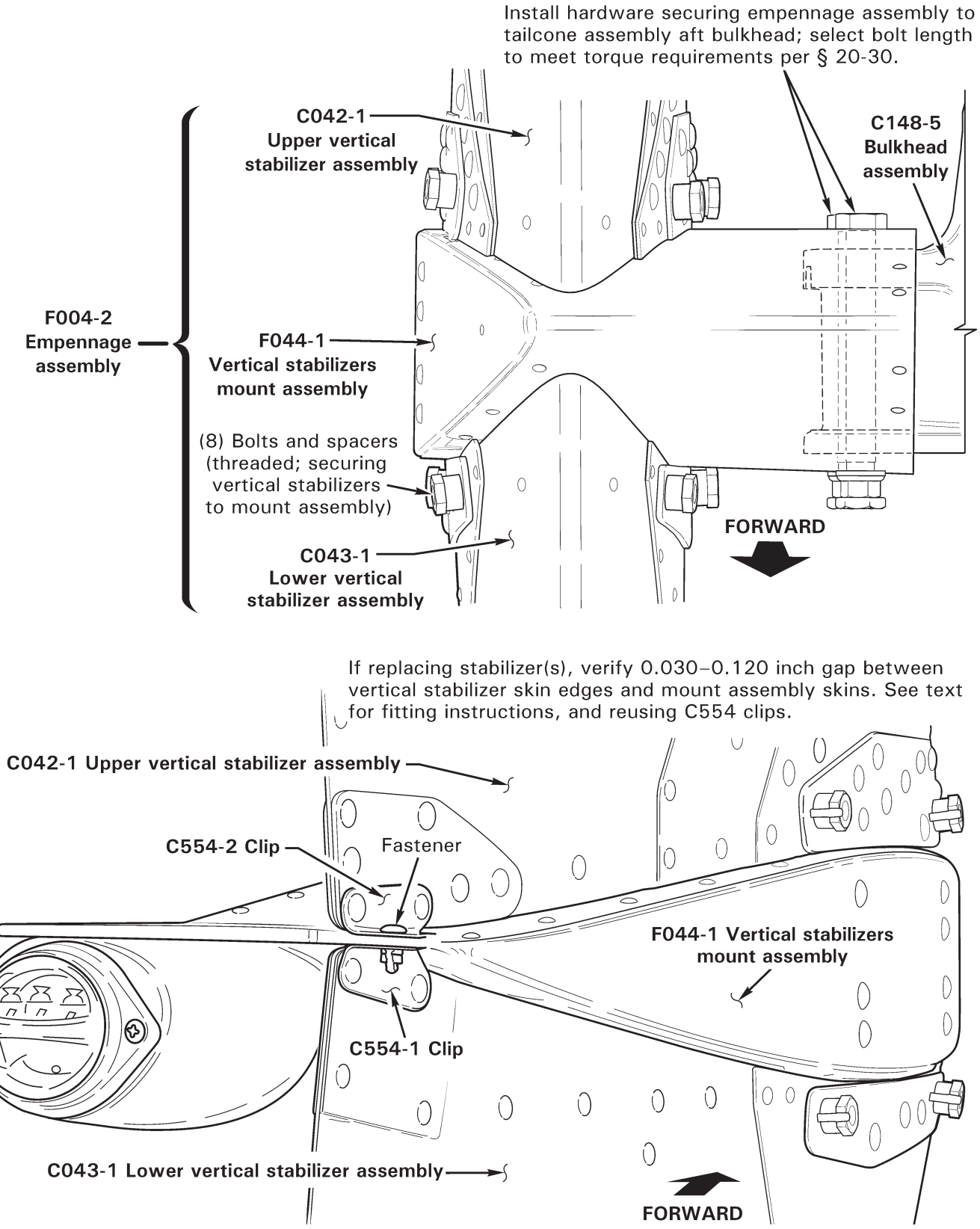


FIGURE 53-7 F004-2 EMPENNAGE ASSEMBLY – TAILCONE ASSEMBLY AFT BULKHEAD

53-70 Empennage Assembly

A. Removal

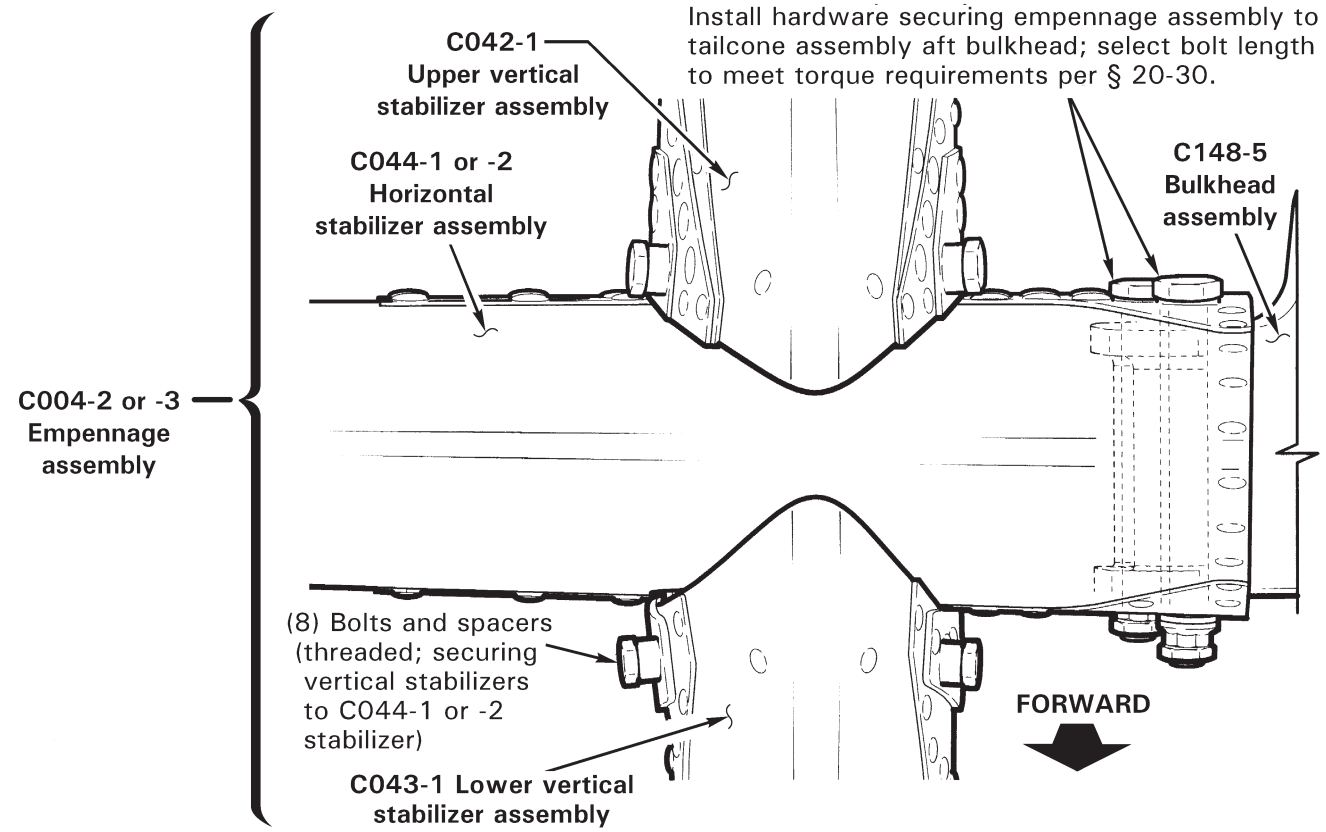
1. Remove tail rotor guard assembly per § 53-50.
2. Remove hardware securing forward MS21919WDG3 clamp to F044-1 vertical stabilizers mount assembly (or C044-1 or -2 horizontal stabilizer, if installed). Cut and discard ty-raps securing position light and gearbox chip detector wires and connectors together. Disconnect position light at connectors.
3. Refer to Figure 53-7 or 53-7A. Supporting empennage assembly, remove hardware securing empennage to tailcone assembly aft bulkhead, and remove empennage.

B. Installation

CAUTION

C004-2 or -3 empennage assemblies may only be installed on C023-21, -24, -34, & -35 Rev AV and prior tailcone assemblies; F004-2 empennage assemblies may only be installed on C023-21, -24, -34, & -35 Rev AW and subsequent tailcone assemblies.

1. Refer to Figure 53-7 or 53-7A. Position empennage assembly on tailcone assembly aft bulkhead.
   a. **If D301 (empennage ballast; ref. § 8-32) weights will not be installed:** Install (2) NAS6606-47 bolts & associated hardware securing empennage to aft bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet torque requirements per § 20-30 Part E. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.
   b. **If D301 (empennage ballast; ref. § 8-32) weights will be installed:** Install (2) NAS6606-78 bolts & associated hardware securing empennage to aft bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet torque requirements per § 20-30 Part E; 1–4 threads may be exposed beyond primary nut. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.
2. Connect position light wire connectors. Secure wires and install hardware securing forward MS21919WDG3 clamp to F044-1 vertical stabilizers mount assembly (or C044-1 or -2 horizontal stabilizer, if installed). Install MS3367-4-9 or -5-9 ty-raps as required to secure wires and connectors together. Cinch ty-raps until snug without over-tightening, and trim tips flush with heads.
3. Test and verify correct function of position and TR chip light circuits.
4. Install tail rotor guard assembly per § 53-50.



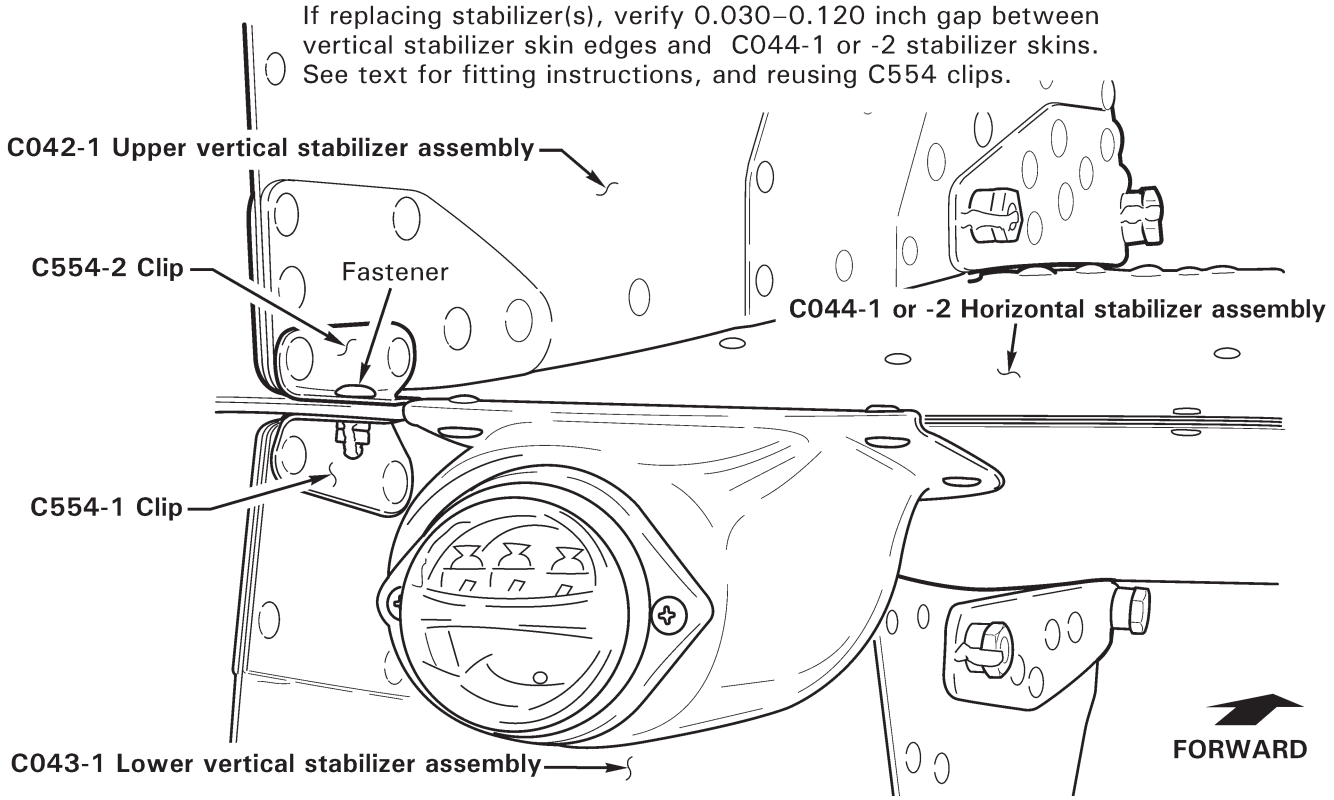


FIGURE 53-7A C004-2 OR C004-3 EMPENNAGE ASSEMBLY – TAILCONE ASSEMBLY AFT BULKHEAD

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53-71 Upper Vertical Stabilizer Assembly

A. Removal

1. Refer to Figure 53-7 or 53-7A. Remove fastener securing C554-1 & -2 clips to F044-1 vertical stabilizers mount assembly (or C044-1 or -2 horizontal stabilizer, if installed).
2. Supporting C042-1 upper vertical stabilizer assembly, remove bolts & spacers securing C042-1 stabilizer to mount (or C044-1 or -2 stabilizer), and remove C042-1 stabilizer.
3. If replacing C042-1 stabilizer, C554-2 clip may be reused. Drill out two rivets securing clip to C042-1 stabilizer.

B. Installation

1. Refer to Figure 53-7 or 53-7A. Position C042-1 upper vertical stabilizer assembly on empennage assembly. Verify 0.030–0.120 inch gap between vertical stabilizer skin edges and F044-1 vertical stabilizers mount (or C044-1 or -2 horizontal stabilizer, if installed) upper skin. File vertical stabilizer skin edge(s) as required. Conversion coat & prime bare aluminum edges per §§ 20-51 & 20-60.
2. Install bolts & spacers securing vertical stabilizer to mount (or C044-1 or -2 stabilizer). Special torque bolts per § 20-33 and torque stripe per Figure 5-1.
3. Install fastener securing C554-1 & -2 clips to mount assembly (or C044-1 or -2 stabilizer). If reusing C554-2 clip, install clip and fastener, and match drill clip to vertical stabilizer with #30 drill. Deburr holes and install rivets. Torque stripe fastener per Figure 5-1.

53-72 Lower Vertical Stabilizer Assembly

A. Removal

1. Remove tail rotor guard assembly per § 53-50.
2. As required, remove C050-2 or G950-2 horizontal stabilizer assembly per § 53-80, and tail skid per § 53-90.
3. Refer to Figure 53-7 or 53-7A. Remove fastener securing C554-1 & -2 clips to F044-1 vertical stabilizers mount assembly (or C044-1 or -2 horizontal stabilizer, if installed).
4. Supporting C043-1 lower vertical stabilizer assembly, remove bolts & spacers securing C043-1 stabilizer to mount assembly (or C044-1 or -2 stabilizer), and remove C043-1 stabilizer.
5. If replacing C043-1 stabilizer, C554-1 clip may be reused. Drill out two rivets securing clip to C043-1 stabilizer.

B. Installation

1. Refer to Figure 53-7 or 53-7A. Position C043-1 lower vertical stabilizer assembly on empennage assembly. Verify 0.030-0.120 inch gap between vertical stabilizer skin edges and F044-1 vertical stabilizers mount assembly (or C044-1 or -2 horizontal stabilizer, if installed) lower skin. File vertical stabilizer skin edge(s) as required. Conversion coat & prime bare aluminum edges per §§ 20-51 & 20-60.
2. Install bolts & spacers securing vertical stabilizer to mount (or C044-1 or -2 stabilizer). Special torque bolts per § 20-33 and torque stripe per Figure 5-1.
3. Install fastener securing C554-1 & -2 clips to mount (or C044-1 or -2 stabilizer). If reusing C554-1 clip, install clip and fastener, and match drill clip to vertical stabilizer with #30 drill. Deburr holes and install rivets. Torque stripe fastener per Figure 5-1.
4. Install C050-2 or G950-2 horizontal stabilizer assembly per § 53-80, and tail skid per § 53-90, as required.
5. Install tail rotor guard assembly per § 53-50.

53-73 F044-1 Vertical Stabilizers Mount Assembly

A. Removal

1. Remove C042-1 & C043-1 vertical stabilizer assemblies per §§ 53-71 & 53-72.
2. Remove hardware securing forward clamp to F044-1 vertical stabilizers mount assembly. Cut and discard ty-raps securing position light and gearbox chip detector wires and connectors together. Disconnect position light at connectors.
3. Supporting mount assembly, remove hardware securing mount to tailcone assembly aft bulkhead and remove mount.

B. Installation

1. Position F044-1 vertical stabilizers mount assembly on tailcone assembly aft bulkhead.
   a. **If D301 (empennage ballast; ref. § 8-32) weights will not be installed:** Install (2) NAS6606-47 bolts & associated hardware securing empennage to aft bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet torque requirements per § 20-30 Part E. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.
   b. **If D301 (empennage ballast; ref. § 8-32) weights will be installed:** Install (2) NAS6606-78 bolts & associated hardware securing empennage to aft bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet torque requirements per § 20-30 Part E; 1–4 threads may be exposed beyond primary nut. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.
2. Install C042-1 & C043-1 vertical stabilizer assemblies per §§ 53-71 & 53-72.
3. If mount assembly was replaced, match drill C554-1 & -2 clips 0.144-inch diameter hole through mount. Deburr hole and install fastener.
4. Connect position light at connectors. Install hardware securing forward clamp to mount assembly. Install MS3367-4-9 or -5-9 ty-raps as required to secure position light and gearbox chip detector wires and connectors together. Cinch ty-raps until snug without over-tightening, and trim tips flush with heads.
5. Test and verify correct function of position and TR chip light circuits.

53-74 C044-1 or -2 Horizontal Stabilizer Assembly

A. Removal

1. Remove C042-1 & C043-1 vertical stabilizer assemblies per §§ 53-71 & 53-72.
2. Remove hardware securing forward clamp to C044-1 or -2 horizontal stabilizer assembly. Cut and discard ty-raps securing position light and gearbox chip detector wires and connectors together. Disconnect position light at connectors.
3. Supporting stabilizer, remove hardware securing stabilizer to tailcone assembly aft bulkhead and remove stabilizer.

53-74 C044-1 or -2 Horizontal Stabilizer Assembly (continued)

B. Installation

1. Position C044-1 or -2 horizontal stabilizer assembly on tailcone assembly aft bulkhead.

   a. **If D301 (empennage ballast; ref. § 8-32) weights will not be installed:** Install (2) NAS6606-47 bolts & associated hardware securing empennage to aft bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet torque requirements per § 20-30 Part E. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.

   b. **If D301 (empennage ballast; ref. § 8-32) weights will be installed:** Install (2) NAS6606-78 bolts & associated hardware securing empennage to aft bulkhead. Use (1) or (2) NAS1149F0663P washers under nut as required to meet torque requirements per § 20-30 Part E; 1–4 threads may be exposed beyond primary nut. Standard torque bolts and palnuts per § 20-32 and torque stripe per Figure 5-1.

2. Install C042-1 & C043-1 vertical stabilizer assemblies per §§ 53-71 & 53-72.

3. If horizontal stabilizer was replaced, match drill C554-1 & -2 clips 0.144-inch diameter hole through horizontal stabilizer. Deburr hole and install fastener.

4. Connect position light at connectors. Install hardware securing forward clamp to horizontal stabilizer. Install MS3367-4-9 or -5-9 ty-raps as required to secure position light and gearbox chip detector wires and connectors together. Cinch ty-raps until snug without over-tightening, and trim tips flush with heads.

5. Test and verify correct function of position and TR chip light circuits.

C. Repair

A single dent on C044-1 or -2 horizontal stabilizer leading edge outboard of vertical stabilizers is permitted provided:

1. Dent is no more than 0.050 inch deep.
2. Dent must have a smooth bottom, with minimum 0.125-inch radius, and no sharp nicks or cracks.
3. Dent must be less than 1.25 inches spanwise.
4. It is permissible to remove above dent via metalworking.

Depending on the damage, U.S. FAA AC (Advisory Circular) 43.13-1B may be used to repair some horizontal stabilizer minor skin damage; refer to the AC's Title Page for limitations. Use only 0.020-inch thick 2024T3 aluminum sheet for repairs; do not use thicker sheet. Skin replacement, damage to spars, and either forward or middle attachment for vertical stabilizers, is not field repairable.

To inspect spars, remove NAS1919B04S01 rivets securing D292-3 outboard rib. Only the inboard D292-2 nose rib or D292-3 outboard tip rib may be field replaced; all other parts require use of the factory jig.

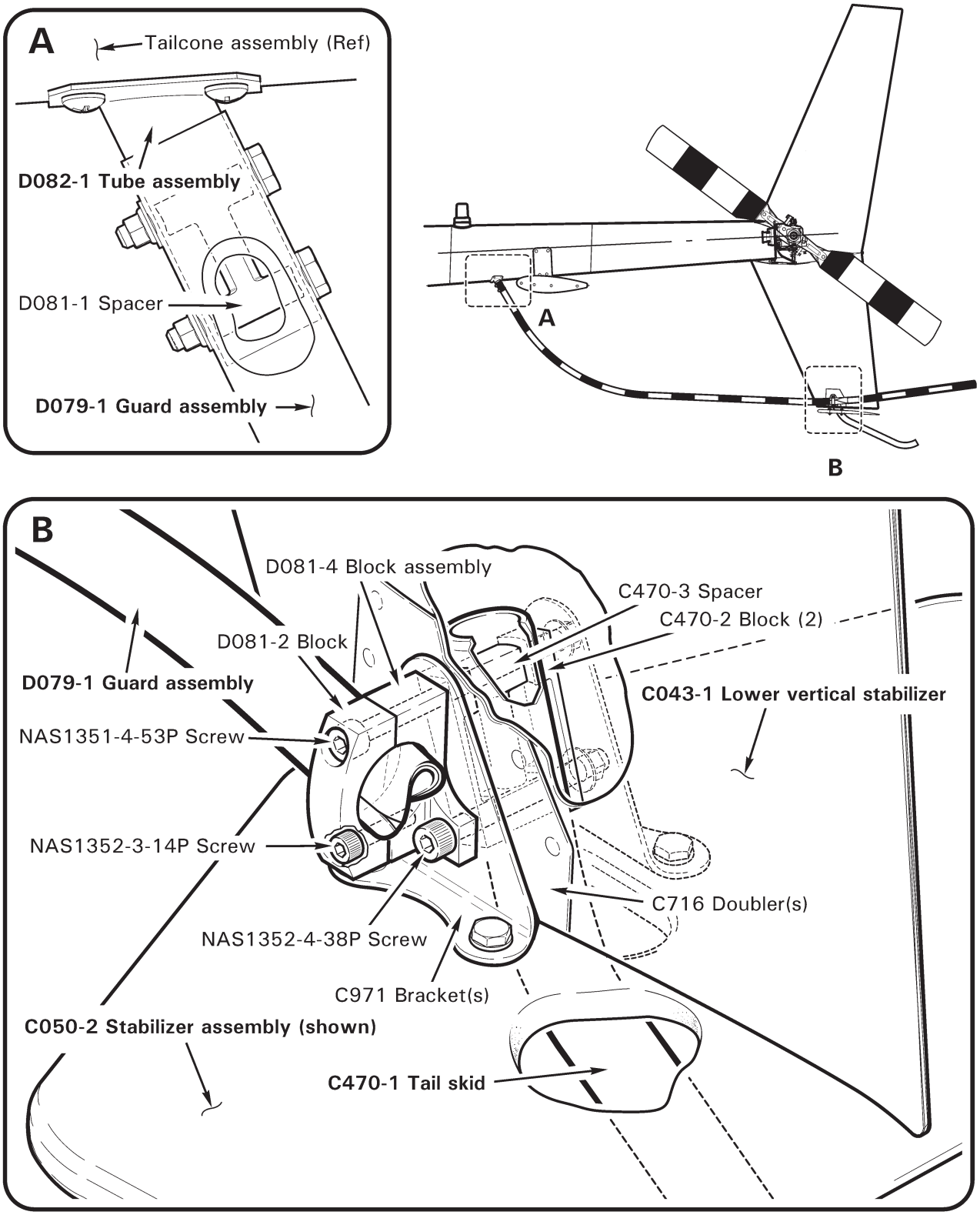

FIGURE 53-8 EMPENNAGE – TAIL ROTOR GUARD

53-80 C050-2 or G950-2 Horizontal Stabilizer Assembly

A. Removal

1. Remove tail skid per § 53-90.
2. Refer to Figure 53-8. Using plastic scraper, remove sealant around edges where C050-2 or G950-2 horizontal stabilizer assembly brackets attach to C043-1 lower vertical stabilizer assembly doublers. Remove horizontal stabilizer assembly.

B. Installation

1. Refer to Figure 53-8. Position C050-2 or G950-2 horizontal stabilizer assembly on C043-1 lower vertical stabilizer assembly and install tail skid per § 53-90.
2. Seal horizontal stabilizer bracket edges to lower vertical stabilizer doublers using B270-1 sealant.

53-90 Tail Skid

A. Removal

1. Refer to Figure 53-8. Support D079-1 guard assembly. Remove hardware securing D081-2 block to C043-1 lower vertical stabilizer assembly and remove block.
2. Support C050-2 or G950-2 horizontal stabilizer assembly and C470-1 tail skid. Remove hardware securing D081-4 block assembly to C043-1 stabilizer and remove block.
3. Remove C470-1 tail skid from C043-1 stabilizer. Remove C470-3 spacer from skid, as required. Support guard and C050-2 or G950-2 stabilizer while hardware is removed.

B. Installation

1. Refer to Figure 53-8. As required, install C470-3 spacer inside C470-1 tail skid wet with epoxy primer. Position tail skid inside C043-1 lower vertical stabilizer, position D081-4 block assembly and install hardware securing block assembly to stabilizer but do not torque at this time.
2. Position D079-1 guard assembly and D081-2 block, install hardware securing block to stabilizer. Verify D081-2 & -4 blocks clamp guard sleeve. For proper guard-to-stabilizer clamping, first standard torque hardware securing tail skid per § 20-32, then special torque screw securing D081-2 block to D081-4 block per § 20-33. Torque stripe fasteners per Figure 5-1.

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65-20 Tail Rotor Drive Shaft Assembly

A. Removal

1. Remove C023 tailcone assembly per Section 53-40.
2. Refer to Figure 65-1. Remove hardware securing F172-3 (bearing) housing to F193-2 hanger.
3. Refer to Figure 65-3. Using a 3-foot extension, remove bolts securing C041-12 damper assembly arm to D072-1 bulkhead assembly angle. Support forward end of D224 drive shaft assembly.
4. Remove hardware securing A558-2 cover to tailcone and remove cover.
5. Support aft end of drive shaft, and remove hardware securing drive shaft to aft C947-3 plate assembly, noting hardware removed. Carefully pull drive shaft forward through tailcone.

B. Installation

1. Refer to Figure 65-1. Route D224 drive shaft assembly through inside of tailcone. Support drive shaft as required.
2. Install hardware securing drive shaft to aft C947-3 plate assembly, as removed, and remove support. Standard torque fasteners per § 20-32 and torque stripe per Figure 5-1. Install A558-2 cover.
3. Refer to Figure 65-3. Remove forward A231 (tailcone) plug assembly. Estimate longitudinal gap (or interference) between C041-12 damper assembly arm and D072-1 bulkhead assembly angle. If gap (or interference) exceeds 0.12 inch, contact RHC Technical Support. If gap (or interference) is less than 0.12 inch, verify correct damper orientation. Using a 3-foot extension, install bolts securing damper to bulkhead angle. Standard torque bolts per § 20-32 and torque stripe per Figure 5-1. Install plug assembly.
4. Install hardware securing F172-3 (bearing) housing to F193-2 hanger, and remove support. Standard torque bolts per § 20-32 and torque stripe per Figure 5-1.
5. Install C023 tailcone assembly per § 53-40.

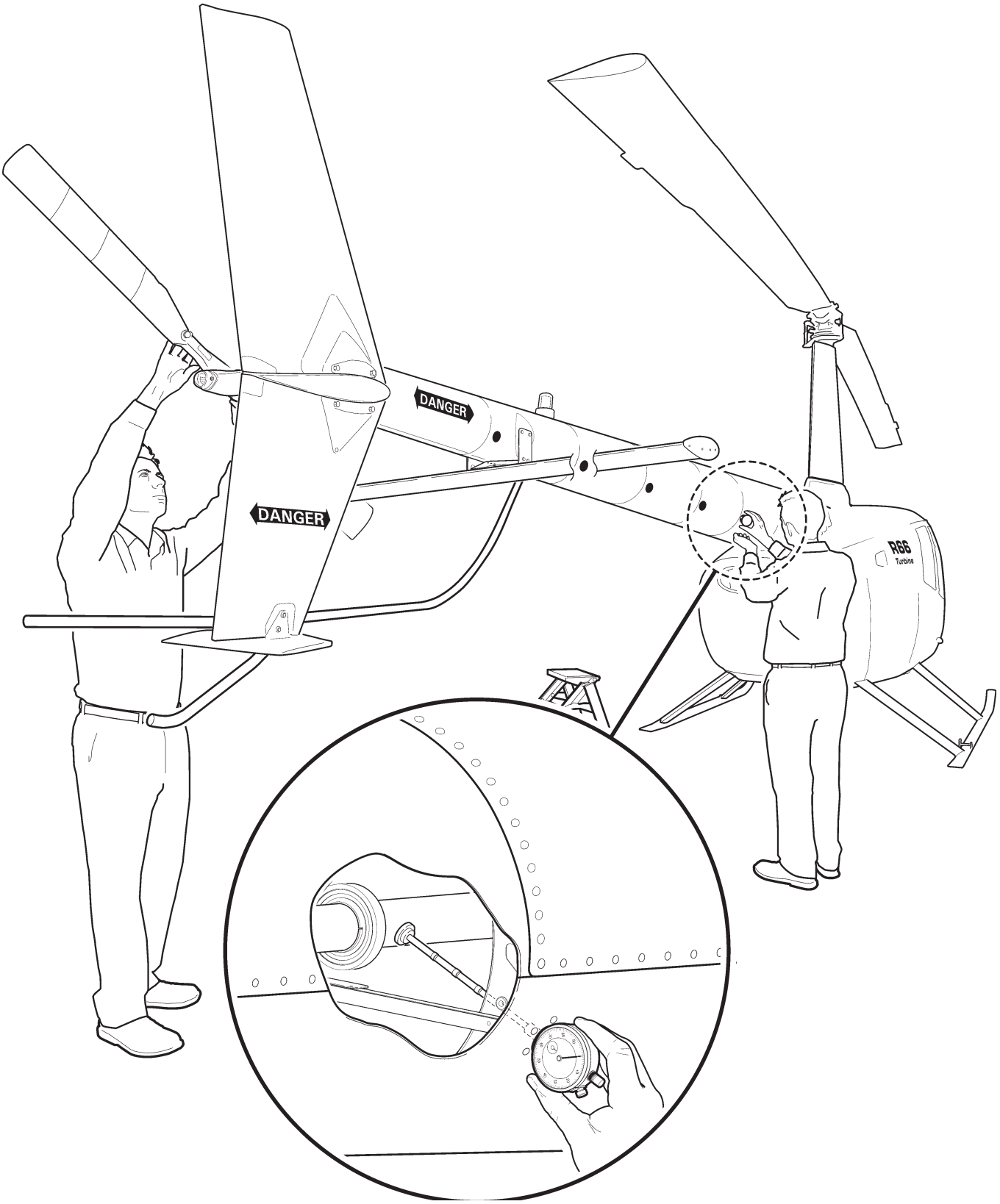

FIGURE 65-2 RUNOUT

CHAPTER 90

POLICE VERSION

90-00 Description

The Police Version is equipped with a nose-mounted gyro-stablized infrared camera, a flat screen monitor for viewing camera images, a video recorder, and a belly-mounted searchlight. Optional FM transceivers, a PA/Siren, Lojack equipment, and a GPS mapping system may also be installed. A dedicated, non-essential electrical bus distributes power to police equipment, and extended landing gear provides additional ground clearance for the camera and searchlight.

The R66 is a four-place helicopter when police equipment is installed.

Basic descriptions of police equipment and systems are given below. More detailed information can be found in manufacturer's documents supplied with individual pieces of equipment.

Some aircraft have a cockpit configuration that does not include the left side cyclic grip in order to prevent interference with the observer's LCD monitor.

There are two basic cockpit configurations (refer to R66 Pilot's Operating Handbook Section 9 Police Version Supplement for illustrations). One configuration uses a modified cyclic control without a left-side grip because the flat screen monitor would interfere. The second configuration uses the standard cyclic control with a left-side grip.

An additional circuit breaker panel on the ledge just forward of the pilot's seat contains all circuit breakers for police equipment. Depending on installed police options, the outboard section of the aft row of circuit breakers may be a 14-volt bus powered by a 28- to 14-volt converter. The police equipment master switch on the left side of the panel controls power to all police equipment.

NOTE
Police circuit breaker panel will not be powered by police equipment master switch unless avionics switch is also on.

Wiring for police equipment is in a separate harness and occupies portions of the main baggage compartment, right side under seat compartments, and right rear footwell. Protective covers isolate the wiring harness as appropriate.

Audio control panel(s) to accommodate police radios and other equipment are installed. The audio system receives power from the audio breaker on the main (left hand) circuit breaker panel. It is not connected to the police equipment master switch.

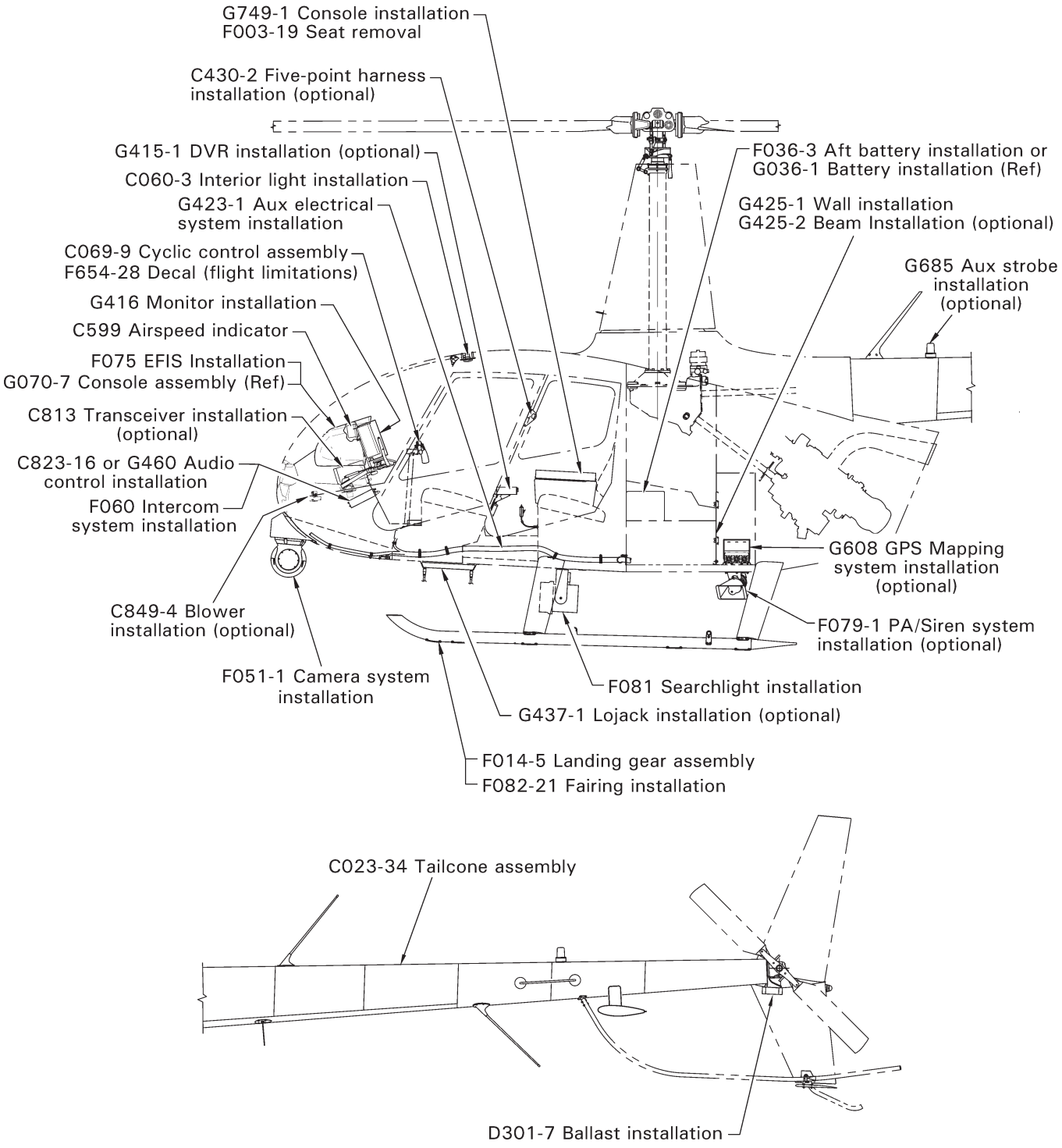

FIGURE 90-1 POLICE VERSION

CHAPTER 92

ENG VERSION

92-00 Description

The Electronic News Gathering (ENG) version of the R66 helicopter (R66 Turbine Newscopter) is configured for a typical news crew consisting of a pilot (in standard, right front seat), an onboard reporter in the left front seat, and a camera operator in the left aft seat.

The ENG version is a four-place helicopter. An equipment console is installed in lieu of the center aft seat.

The camera operator uses a laptop controller to operate an HD video camera and zoom lens mounted to a gyro-stabilized gimbal on the helicopter chin. Micro cameras are located in the cabin for filming an onboard reporter, and another micro camera is mounted to the horizontal stabilizer sometimes used for weather reporting or to display the aircraft in flight.

A seven-inch monitor and a Geneva digital audio controller are located on each side of the instrument console. A ten-inch monitor is mounted on an arm assembly in front of the left aft passenger and controls are located in the equipment console. Each monitor allows for independent monitoring and transmitting of video from cameras.

R66 ENG is equipped with a microwave system which provides live broadcasting capability.

Other features include a video recorder, TV tuners for monitoring local television broadcasts, and radios for monitoring AM/FM radio broadcasts and for talking with ground personnel.

ENG equipment has a dedicated circuit breaker panel with a second master switch. Some ENG equipment is 14-volt equipment (R66 electrical system is 28-volt) requiring a separate 14-volt sub-bus powered by a voltage converter.

Flight with gimbal camera removed is permissible with D050-13 cover assembly installed. Refer to § 92-171 Part F for maintenance procedures.

Flight with pod antenna removed is permissible with mounting brackets removed and cables stowed. Refer to § 92-184 Part E for maintenance procedures.

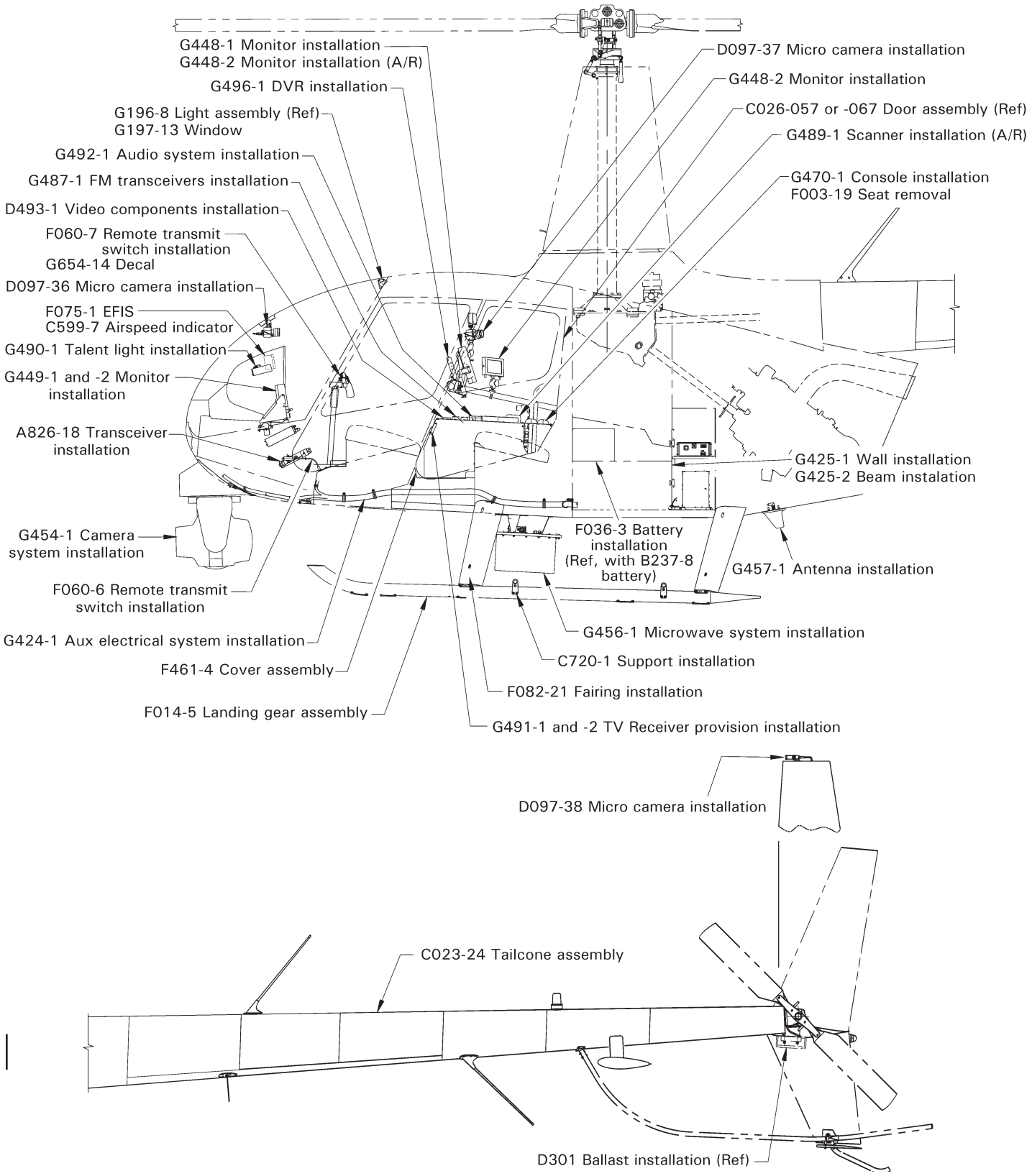

FIGURE 92-1 ENG VERSION

REVISION LOG

SEP 2023

The R66 Maintenance Manual (MM) list of effective pages and effective dates are given below. If a previously issued page is not listed below, it is no longer an effective page and must be discarded. The issue or revision date is in bold at the top of each revision log page.

Please visit https://robinsonheli.com to verify the issue or revision date is current.

Page	*Date*	*Page*	*Date*	*Page*	*Date*
i	SEP 2023	4.2	JUL 2023	5.21A	JUL 2023
ii	SEP 2023	4.3	SEP 2023	5.21B	MAY 2021
iii	JUL 2020	4.4	SEP 2023	5.21C	MAY 2021
iv	JUL 2020			5.21D	JUL 2023
v	APR 2017	5.i	JUL 2020	5.22	JUL 2023
vi	APR 2017	5.ii	JUL 2020	5.23	MAY 2021
		5.1	JUL 2020	5.24	MAY 2021
1.i	JUL 2023	5.2	JUL 2020	5.25	APR 2019
1.ii	JUL 2023	5.3	JUL 2023	5.26	APR 2019
1.1	APR 2019	5.4	JUL 2023	5.27	JUL 2023
1.2	APR 2019	5.5	MAY 2021	5.28	JUL 2023
1.3	JUL 2023	5.6	MAY 2021	5.28A	JUL 2023
1.4	JUL 2023	5.7	JUL 2020	5.28B	JUL 2023
1.4A	JUL 2023	5.8	JUL 2020	5.29	SEP 2023
1.4B	JUL 2023	5.9	JUL 2020	5.30	SEP 2023
1.5	SEP 2012	5.9A	JUL 2020	5.31	JUL 2023
1.6	SEP 2012	5.9B	JUL 2020	5.32	JUL 2023
1.7	SEP 2023	5.10	JUL 2020	5.33	JUL 2023
1.8	SEP 2023	5.11	JUL 2020	5.34	JUL 2023
1.9	JUL 2023	5.12	JUL 2020	5.34A	MAY 2021
1.10	JUL 2023	5.13	JUL 2023	5.34B	MAY 2021
1.11	JUL 2020	5.14	JUL 2023	5.35	JUL 2023
1.12	JUL 2020	5.15	MAY 2021	5.36	JUL 2023
1.13	JUL 2020	5.16	MAY 2021	5.37	MAY 2021
1.14	JUL 2020	5.16A	JUL 2023	5.38	MAY 2021
1.15	JUL 2020	5.16B	JUL 2023	5.38A	MAY 2021
1.16	JUL 2020	5.17	JUL 2023	5.38B	MAY 2021
1.17	JUL 2020	5.18	JUL 2023	5.39	JUL 2023
1.18	JUL 2020	5.19	JUL 2020	5.39A	JUL 2023
		5.20	JUL 2020	5.39B	JUL 2020
4.i	SEP 2023	5.20A	JUL 2023	5.39C	JUL 2020
4.ii	SEP 2023	5.20B	JUL 2023	5.39D	JUL 2020
4.1	JUL 2023	5.21	JUL 2023	5.40	JUL 2020

REVISION LOG

SEP 2023

Page	Date
5.41	SEP 2023
5.42	SEP 2023
5.43	MAY 2015
5.44	MAY 2015
5.45	APR 2019
5.46	APR 2019
5.47	APR 2019
5.47A	APR 2019
5.47B	APR 2017
5.48	APR 2017
5.49	MAY 2021
5.50	MAY 2021
5.51	SEP 2023
5.52	SEP 2023
6.i	SEP 2023
6.ii	SEP 2023
6.1	SEP 2023
6.2	SEP 2023
6.3	SEP 2023
6.4	SEP 2023
6.5	25 OCT 2010
6.6	25 OCT 2010
6.7	SEP 2023
6.8	SEP 2023
6.9	SEP 2023
6.10	SEP 2023
6.11	SEP 2023
6.12	SEP 2023
7.i	25 OCT 2010
7.ii	25 OCT 2010
7.1	SEP 2012
7.2	SEP 2012
7.3	SEP 2012
7.4	SEP 2012
7.5	25 OCT 2010
7.6	25 OCT 2010
8.i	SEP 2023
8.ii	SEP 2023
8.1	SEP 2012
8.2	SEP 2012
8.3	SEP 2012
8.4	SEP 2012
8.5	25 OCT 2010
8.6	25 OCT 2010
8.7	SEP 2012
8.8	SEP 2012
8.9	25 OCT 2010
8.10	25 OCT 2010
8.11	SEP 2023
8.12	SEP 2023
8.13	SEP 2023
8.14	SEP 2023
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9.ii	25 OCT 2010
9.1	25 OCT 2010
9.2	25 OCT 2010
9.3	SEP 2012
9.4	SEP 2012
10.i	25 OCT 2010
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10.1	SEP 2023
10.2	SEP 2023
10.3	SEP 2023
10.4	SEP 2023
10.5	25 OCT 2010
10.6	25 OCT 2010
11.i	APR 2017
11.ii	APR 2017
11.1	MAY 2021
11.2	MAY 2021
12.i	JUL 2020
12.ii	JUL 2020
12.1	SEP 2012
12.2	SEP 2012
12.3	APR 2019
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12.12	SEP 2012
12.13	JUL 2023
12.13A	JUL 2023
12.13B	APR 2017
12.14	APR 2017
12.15	JUL 2023
12.16	JUL 2023
12.17	JUL 2020
12.17A	JUL 2020
12.17B	JUL 2020
12.18	JUL 2020
12.19	JUL 2023
12.20	JUL 2023
12.21	JUL 2023
12.22	JUL 2023
18.i	JUL 2023
18.ii	JUL 2023
18.1	SEP 2023
18.2	SEP 2023
18.3	JUL 2023
18.4	JUL 2023
18.5	SEP 2023
18.6	SEP 2023

REVISION LOG

SEP 2023

Page	Date	Page	Date	Page	Date
18.7	SEP 2023	18.37	JUL 2023	20.16	JUL 2023
18.7A	SEP 2023	18.38	JUL 2023	20.17	JUL 2023
18.7B	APR 2017			20.18	JUL 2023
18.7C	APR 2017	20.i	JUL 2023	20.18A	SEP 2023
18.7D	APR 2017	20.ii	JUL 2023	20.18B	SEP 2023
18.8	APR 2017	20.1	JUL 2023	20.19	JUL 2023
18.9	APR 2017	20.2	JUL 2023	20.20	JUL 2023
18.10	APR 2017	20.2A	JUL 2023	20.21	JUL 2020
18.10A	APR 2017	20.2B	JUL 2023	20.22	JUL 2020
18.10B	APR 2017	20.3	JUL 2023	20.23	MAY 2021
18.11	25 OCT 2010	20.4	JUL 2023	20.24	MAY 2021
18.12	25 OCT 2010	20.5	JUL 2023	20.25	APR 2017
18.13	25 OCT 2010	20.6	JUL 2023	20.26	APR 2017
18.14	25 OCT 2010	20.7	SEP 2023		
18.15	SEP 2023	20.8	SEP 2023	21.i	SEP 2012
18.16	SEP 2023	20.9	SEP 2023	21.ii	SEP 2012
18.17	SEP 2023	20.10	SEP 2023	21.1	MAY 2015
18.18	SEP 2023	20.10A	JUL 2023	21.2	MAY 2015
18.19	JUL 2023	20.10B	JUL 2023	21.3	SEP 2012
18.20	JUL 2023	20.11	JUL 2023	21.4	SEP 2012
18.21	JUL 2023	20.11A	JUL 2023	21.5	MAY 2015
18.21A	JUL 2023	20.11B	JUL 2020	21.6	MAY 2015
18.21B	JUL 2023	20.11C	JUL 2020	21.7	SEP 2012
18.22	JUL 2023	20.11D	JUL 2020	21.8	SEP 2012
18.23	JUL 2023	20.11E	JUL 2020	21.9	JUL 2020
18.24	JUL 2023	20.11F	JUL 2020	21.10	JUL 2020
18.25	JUL 2023	20.11G	JUL 2020	21.11	SEP 2012
18.26	JUL 2023	20.11H	JUL 2020	21.12	SEP 2012
18.27	MAY 2015	20.11I	JUL 2020	21.13	SEP 2012
18.28	MAY 2015	20.11J	JUL 2020	21.14	SEP 2012
18.29	JUL 2023	20.11K	JUL 2020		
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18.31	MAY 2015	20.11M	JUL 2020	22.ii	SEP 2023
18.32	MAY 2015	20.11N	JUL 2020	22.1	JUL 2023
18.33	JUL 2023	20.12	JUL 2020	22.2	JUL 2023
18.34	JUL 2023	20.13	JUL 2023	22.3	JUL 2023
18.35	JUL 2023	20.14	JUL 2023	22.4	JUL 2023
18.36	JUL 2023	20.15	JUL 2023	22.5	JUL 2023

REVISION LOG

SEP 2023

Page	Date	Page	Date	Page	Date
22.6	JUL 2023	25.25	APR 2019	28.22	JUL 2020
22.7	JUL 2023	25.26	APR 2019	28.23	APR 2019
22.8	JUL 2023	25.27	APR 2019	28.24	APR 2019
22.9	JUL 2023	25.28	APR 2019	28.25	JUL 2020
22.10	JUL 2023	25.29	APR 2019	28.26	JUL 2020
22.11	SEP 2023	25.30	APR 2019	28.27	JUL 2020
22.12	SEP 2023	25.31	JUL 2023	28.28	JUL 2020
22.13	SEP 2023	25.32	JUL 2023	28.29	JUL 2023
22.14	SEP 2023			28.30	JUL 2023
22.15	SEP 2023	28.i	JUL 2023	28.31	JUL 2023
22.16	SEP 2023	28.ii	JUL 2023	28.32	JUL 2023
		28.1	JUL 2023	28.33	JUL 2023
25.i	JUL 2023	28.2	JUL 2023	28.34	JUL 2023
25.ii	JUL 2023	28.3	APR 2017	28.35	JUL 2023
25.1	JUL 2023	28.4	APR 2017	28.36	JUL 2023
25.2	JUL 2023	28.5	JUL 2020	28.37	JUL 2023
25.3	SEP 2012	28.6	JUL 2020	28.38	JUL 2023
25.4	SEP 2012	28.7	JUL 2020	28.39	JUL 2023
25.5	APR 2019	28.8	JUL 2020	28.40	JUL 2023
25.6	APR 2019	28.9	JUL 2020	28.41	JUL 2023
25.7	APR 2019	28.9A	JUL 2020	28.42	JUL 2023
25.8	APR 2019	28.9B	JUL 2020		
25.9	APR 2019	28.10	JUL 2020	29.i	MAY 2015
25.10	APR 2019	28.11	JUL 2020	29.ii	MAY 2015
25.11	APR 2019	28.11A	JUL 2020	29.1	MAY 2015
25.12	APR 2019	28.11B	JUL 2020	29.2	MAY 2015
25.13	MAY 2021	28.11C	JUL 2020	29.3	JUL 2020
25.14	MAY 2021	28.11D	JUL 2020	29.4	JUL 2020
25.15	APR 2019	28.12	JUL 2020	29.5	MAY 2015
25.16	APR 2019	28.13	APR 2017	29.6	MAY 2015
25.17	JUL 2023	28.14	APR 2017	29.7	JUL 2020
25.18	JUL 2023	28.15	JUL 2020	29.8	JUL 2020
25.19	APR 2019	28.16	JUL 2020	29.9	JUL 2020
25.20	APR 2019	28.17	JUL 2020	29.10	JUL 2020
25.21	APR 2019	28.18	JUL 2020		
25.22	APR 2019	28.19	JUL 2020	32.i	SEP 2012
25.23	APR 2019	28.20	JUL 2020	32.ii	SEP 2012
25.24	APR 2019	28.21	JUL 2020	32.1	MAY 2015

REVISION LOG

SEP 2023

Page	Date	Page	Date	Page	Date
32.2	MAY 2015	52.4	JUL 2020	53.17	SEP 2023
32.3	APR 2017	52.5	JUL 2023	53.18	SEP 2023
32.3A	APR 2017	52.6	JUL 2023	53.19	SEP 2023
32.3B	APR 2017	52.7	25 OCT 2010	53.20	SEP 2023
32.4	APR 2017	52.8	25 OCT 2010	53.21	SEP 2023
32.5	SEP 2012	52.9	JUL 2020	53.22	SEP 2023
32.6	SEP 2012	52.10	JUL 2020	53.23	SEP 2023
32.7	SEP 2012	52.11	JUL 2023	53.24	SEP 2023
32.8	SEP 2012	52.12	JUL 2023	53.25	SEP 2023
32.9	SEP 2023	52.13	JUL 2023	53.26	SEP 2023
32.10	SEP 2023	52.14	JUL 2023	53.27	SEP 2023
32.11	SEP 2012	52.15	JUL 2023	53.28	SEP 2023
32.12	SEP 2012	52.16	JUL 2023		
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32.14	MAY 2021	52.18	JUL 2023	62.ii	JUL 2023
32.15	SEP 2012	52.19	JUL 2023	62.1	JUL 2023
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32.18	SEP 2012	52.22	JUL 2023	62.4	JUL 2023
32.19	JUL 2023			62.5	JUL 2023
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32.21	JUL 2023	53.ii	SEP 2023	62.7	JUL 2023
32.22	JUL 2023	53.1	25 OCT 2010	62.8	JUL 2023
32.23	SEP 2012	53.2	25 OCT 2010	62.9	JUL 2023
32.24	SEP 2012	53.3	APR 2019	62.10	JUL 2023
		53.4	APR 2019	62.10A	JUL 2023
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33.ii	MAY 2015	53.6	JUL 2020	62.11	JUL 2023
33.1	SEP 2023	53.7	JUL 2020	62.12	JUL 2023
33.2	SEP 2023	53.8	JUL 2020	62.13	JUL 2023
33.3	MAY 2015	53.9	25 OCT 2010	62.14	JUL 2023
33.4	MAY 2015	53.10	25 OCT 2010	62.15	JUL 2023
		53.11	MAY 2015	62.16	JUL 2023
52.i	JUL 2023	53.12	MAY 2015	62.17	JUL 2023
52.ii	JUL 2023	53.13	SEP 2023	62.17A	JUL 2023
52.1	JUL 2020	53.14	SEP 2023	62.17B	JUL 2023
52.2	JUL 2020	53.15	SEP 2023	62.17C	JUL 2023
52.3	JUL 2020	53.16	SEP 2023	62.17D	JUL 2020

REVISION LOG

SEP 2023

Page	Date
62.18	JUL 2020
62.19	JUL 2020
62.20	JUL 2020
62.21	APR 2019
62.21A	APR 2019
62.21B	APR 2019
62.22	APR 2019
62.23	APR 2019
62.24	APR 2019
62.25	MAY 2021
62.26	MAY 2021
62.27	MAY 2021
62.28	MAY 2021
62.29	JUL 2020
62.30	JUL 2020
63.i	APR 2017
63.ii	APR 2017
63.1	APR 2017
63.2	APR 2017
63.3	JUL 2020
63.4	JUL 2020
63.5	JUL 2023
63.6	JUL 2023
63.7	APR 2017
63.8	APR 2017
63.9	JUL 2020
63.10	JUL 2020
63.11	APR 2017
63.12	APR 2017
63.13	APR 2017
63.14	APR 2017
64.i	JUL 2023
64.ii	JUL 2023
64.1	JUL 2023
64.2	JUL 2023
64.3	JUL 2023
64.4	JUL 2023
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64.8	JUL 2023
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64.11	JUL 2023
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64.20	JUL 2023
64.21	JUL 2023
64.22	JUL 2023
65.i	SEP 2012
65.ii	SEP 2012
65.1	MAY 2015
65.2	MAY 2015
65.3	SEP 2023
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65.7	MAY 2015
65.8	MAY 2015
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65.10	MAY 2015
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65.12	SEP 2012
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67.ii	MAY 2015
67.1	MAR 2012
67.2	MAR 2012
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67.4	25 OCT 2010
67.5	25 OCT 2010
67.6	25 OCT 2010
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67.10	APR 2017
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67.12	MAY 2015
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67.17	MAY 2015
67.18	MAY 2015
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71.ii	JUL 2020
71.1	JUL 2020
71.2	JUL 2020
71.3	JUL 2020
71.3A	JUL 2020
71.3B	JUL 2020
71.4	JUL 2020
71.5	JUL 2020
71.6	JUL 2020
71.7	JUL 2023
71.7A	JUL 2023
71.7B	JUL 2023
71.8	JUL 2023
71.9	JUL 2020
71.10	JUL 2020
71.11	APR 2019
71.12	APR 2019
71.13	APR 2017
71.14	APR 2017

REVISION LOG

SEP 2023

Page	Date
71.15	APR 2019
71.16	APR 2019
71.17	JUL 2020
71.18	JUL 2020
71.19	JUL 2020
71.20	JUL 2020
71.21	APR 2017
71.22	APR 2017
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75.ii	25 OCT 2010
75.1	25 OCT 2010
75.2	25 OCT 2010
76.i	25 OCT 2010
76.ii	25 OCT 2010
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76.2	JUL 2023
76.3	25 OCT 2010
76.4	25 OCT 2010
76.5	25 OCT 2010
76.6	25 OCT 2010
76.7	25 OCT 2010
76.8	25 OCT 2010
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79.ii	APR 2017
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79.2	APR 2019
79.3	APR 2017
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92.ii	JUL 2020
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92.2	SEP 2023
92.3	JUL 2020
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92.12	JUL 2020
92.13	JUL 2020
92.14	JUL 2020
92.15	JUL 2020

REVISION LOG

SEP 2023

Page	Date	Page	Date	Page	Date
92.16	JUL 2020	92.52	JUL 2020	95.19	APR 2017
92.17	JUL 2020	92.53	JUL 2020	95.20	APR 2017
92.18	JUL 2020	92.54	JUL 2020	95.21	JUL 2020
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92.20	JUL 2020	92.56	JUL 2020	95.23	APR 2019
92.21	JUL 2020	92.57	JUL 2020	95.24	APR 2019
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92.23	JUL 2020	92.59	JUL 2020	95.26	APR 2019
92.24	JUL 2020	92.60	JUL 2020	95.27	APR 2019
92.25	JUL 2020	92.61	JUL 2020	95.28	APR 2019
92.26	JUL 2020	92.62	JUL 2020	95.29	APR 2019
92.27	JUL 2020	92.63	JUL 2020	95.30	APR 2019
92.28	JUL 2020	92.64	JUL 2020	95.31	APR 2019
92.29	JUL 2020	92.65	JUL 2020	95.32	APR 2019
92.30	JUL 2020	92.66	JUL 2020		
92.31	JUL 2020	92.67	JUL 2020	96.i	JUL 2023
92.31A	JUL 2020	92.68	JUL 2020	96.ii	JUL 2023
92.31B	JUL 2020			96.1	APR 2019
92.32	JUL 2020	95.i	JUL 2020	96.2	APR 2019
92.33	JUL 2020	95.ii	JUL 2020	96.3	APR 2019
92.34	JUL 2020	95.1	APR 2017	96.4	APR 2019
92.35	JUL 2020	95.2	APR 2017	96.4A	JUL 2023
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92.37	JUL 2020	95.4	APR 2017	96.5	JUL 2023
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92.39	JUL 2020	95.6	APR 2017	96.7	JUL 2023
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92.43	JUL 2020	95.10	APR 2019	96.11	APR 2017
92.44	JUL 2020	95.11	APR 2017	96.12	APR 2017
92.45	JUL 2020	95.12	APR 2017	96.13	APR 2017
92.46	JUL 2020	95.13	APR 2017	96.14	APR 2017
92.47	JUL 2020	95.14	APR 2017	96.15	APR 2017
92.48	JUL 2020	95.15	APR 2017	96.16	APR 2017
92.49	JUL 2020	95.16	APR 2017	96.17	JUL 2023
92.50	JUL 2020	95.17	APR 2017	96.18	JUL 2023
92.51	JUL 2020	95.18	APR 2017	96.19	JUL 2023

REVISION LOG

SEP 2023

Page	Date	Page	Date	Page	Date
96.20	JUL 2023	98.2	JUL 2023	98.34	APR 2017
		98.2A	JUL 2020	98.35	APR 2017
97.i	APR 2019	98.2B	JUL 2020	98.36	APR 2017
97.ii	APR 2019	98.3	APR 2017	98.37	APR 2017
97.1	APR 2019	98.4	APR 2017	98.38	APR 2017
97.2	APR 2019	98.5	APR 2017	98.39	APR 2017
97.3	APR 2019	98.6	APR 2017	98.40	APR 2017
97.4	APR 2019	98.7	APR 2017	98.41	APR 2017
97.5	APR 2019	98.8	APR 2017	98.42	APR 2017
97.6	APR 2019	98.9	APR 2017	98.43	APR 2017
97.7	APR 2019	98.10	APR 2017	98.44	APR 2017
97.8	APR 2019	98.11	APR 2017	98.45	JUL 2020
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97.13	APR 2019	98.16	APR 2019	98.48	JUL 2023
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97.15	APR 2019	98.18	APR 2017	98.50	APR 2019
97.16	APR 2019	98.19	APR 2017	98.51	APR 2019
97.17	JUL 2020	98.20	APR 2017	98.52	APR 2019
97.18	JUL 2020	98.21	APR 2017	98.53	APR 2019
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97.20	APR 2019	98.23	APR 2017	98.55	APR 2019
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97.22	APR 2019	98.24A	JUL 2020	98.57	APR 2019
97.23	APR 2019	98.24B	JUL 2020	98.58	APR 2019
97.24	APR 2019	98.24C	JUL 2020	98.59	APR 2019
97.25	APR 2019	98.24D	JUL 2020	98.60	APR 2019
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97.27	APR 2019	98.26	APR 2017	98.62	JUL 2020
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		98.30	APR 2017	99.i	APR 2017
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98.ii	JUL 2023	98.32	APR 2017	99.1	JUL 2023
98.1	JUL 2023	98.33	APR 2017	99.2	JUL 2023

REVISION LOG

SEP 2023

Page	*Date*
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99.4	JUL 2023
99.5	JUL 2023
99.6	JUL 2023
99.7	JUL 2023
99.8	JUL 2023
99.9	JUL 2023
99.10	JUL 2023
100.i	MAY 2021
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100.6	SEP 2023
100.7	SEP 2023
100.8	SEP 2023
100.9	SEP 2023
100.10	SEP 2023